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A CHECK LIST OF THE BIRDS OF OHIO, WITH THE MIGRATION DATES FOR THE BIRDS OF CENTRAL OHIO

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The field identification of birds is greatly facilitated if the observer knows what birds are apt to occur at any given time and place. Since previous check lists (Trautman, 1935a, Borror, 1941) have been in such demand, and since a number of new species have been added to both the state list and the central Ohio list in the last several years, it has seemed advisable to bring these lists up to date.

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CHECK LIST OF THE BIRDS OF OHIO

The following list is by species, with comments on the status of subspecies. The species starred (*) have been recorded from central Ohio, and are included in the table in the latter part of this paper; the status of these species in the state can be inferred from data given in the table. The species in the list are grouped into five categories: I, the main list, of species based on specimens; II, a hypothetical list, either based on old records of specimens that cannot now be located, or on sight records; III, species formerly occurring in Ohio but now extirpated (at least in Ohio); IV, exotics, either escaped cage birds, or species that have been introduced and are still of very local distribution; and V, others, including hybrids, prehistoric species, and species that were introduced into Ohio at one time but failed to become established.

In the case of casual or accidental species that are included in the main list on the basis of one or a few specimens, the location of the specimens (based on data in the literature, except for specimens in the Ohio State Museum), is indicated as follows: CMNH—Cleveland Museum of Natural History; CMP—Carnegie Museum, Pittsburgh; CSNH—Cincinnati Society of Natural History; OM—Oberlin Museum; OSM—Ohio State Museum, Columbus; UCM—University of Cincinnati Museum; UM—Museum of Zoology, University of Michigan; and USNM—United States National Museum, Washington, D. C.

The nomenclature followed is that of the Fourth Edition of the American Ornithologists' Union Check-List (1931), and Supplements 19-24 (1944-1949). Forms that are either not recognized by the American Ornithologists' Union or are on the A. O. U. hypothetical list (including hybrids and exotics) are indicated by a dagger (†).

I. Species Based on Specimens

- *1. Common Loon, *Gavia immer* (Brünnich). Both the Lesser Common Loon (*G. i. elasson* Bishop) and the Greater Common Loon (*G. i. immer*) have been reported from Ohio, but according to Trautman (1935b) the lesser common loon is probably the more common subspecies in the state.
2. Pacific Loon, *Gavia arctica pacifica* (Lawrence). Casual; several records, including a specimen taken at Ashtabula 2/19/09 (Jones 1918) (OM).
- *3. Red-throated Loon, *Gavia stellata* (Pontoppidan). Rare.
- *4. Holboell's Grebe, *Colymbus grisegena holboellii* (Reinhardt).
- *5. Horned Grebe, *Colymbus auritus* Linnaeus.
6. Eared Grebe, *Colymbus caspicus californicus* (Heermann). Two records: Lake Co. 4/22/41 (Godfrey 1943b) (CMNH), and South Bass Island 11/29/45 (Trautman 1946) (OSM).
7. Western Grebe, *Aechmophorus occidentalis* (Lawrence). One record, near Youngstown 10/30/13 (Fordyce 1913) (CMP).
- *8. Pied-billed Grebe, *Podilymbus podiceps podiceps* (Linnaeus).
9. Black-capped Petrel, *Pterodroma hasitata* (Kuhl). One record, near Cincinnati 10/5/98 (Lindahl 1899) (CSNH).
10. Leach's Petrel, *Oceanodroma leucorhoa leucorhoa* (Vieillot). One record, Dayton 5/16/29 (Blincoe 1930) (OSM).
- *11. White Pelican, *Pelecanus erythrorhynchus* Gmelin. Rare.
12. Gannet, *Moris bassana* (Linnaeus). Several records along Lake Erie in winter (Hadelor 1926, Mayfield 1948), including a specimen from Lucas Co. 12/22/47 (OSM).
- *13. Northern Double-crested Cormorant, *Phalacrocorax auritus auritus* (Lesson).
14. Water-turkey, *Anhinga anhinga leucogaster* (Vieillot). One record, Lowell, Washington Co., Nov. 1885 (Jones 1905) (OSM).
- *15. Eastern Great Blue Heron, *Ardea herodias herodias* Linnaeus.
- *16. American Egret, *Casmerodius albus egretta* (Gmelin).
- *17. Snowy Egret, *Leucophox thula thula* (Molina).
- *18. Little Blue Heron, *Florida caerulea caerulea* (Linnaeus). Practically all the Ohio records are of immature (white) birds.
- *19. Eastern Green Heron, *Butorides virescens virescens* (Linnaeus).
- *20. Black-crowned Night Heron, *Nycticorax nycticorax hoactli* (Gmelin).
- *21. Yellow-crowned Night Heron, *Nyctanassa violacea* (Linnaeus). Several records, some nesting, mostly from northern and northwestern Ohio (Walker 1928b, Bruce 1931, Hicks 1935a, Walker 1940, Price 1946a, Mayfield 1949).
- *22. American Bittern, *Botaurus lentiginosus* (Montagu).
- *23. Eastern Least Bittern, *Ixobrychus exilis exilis* (Gmelin).
24. Wood Ibis, *Mycteria americana* Linnaeus. Three records, one at Cleveland in 1879 (Wheaton 1882), and two at Wilmington: 7/23/09 (Jones 1918), and 5/5/46 (Hazard 1947) (OSM).
25. Eastern Glossy Ibis, *Plegadis falcinellus falcinellus* (Linnaeus). A few northern Ohio records (Kirtland 1850, Mayfield 1943a and 1947, Campbell 1944), and one record from southern Ohio (a bird collected at Grant Lake in Brown Co. 10/1/49 by Ronald Austing).
- *26. Whistling Swan, *Cygnus columbianus* (Ord).
- *27. Common Canada Goose, *Branta canadensis canadensis* (Linnaeus).
- *28. American Brant, *Branta bernicla hrota* (Müller). Several Ohio records (Fisher 1907, Jones 1908, Hadelor 1930, Trautman 1940); a skin (OSM), "Lake Erie, Ohio," 11/10/74.
29. Barnacle Goose, *Branta leucopsis* (Bechstein). One record, Winous Point (Sandusky Bay) 11/5/25 (Aldrich 1932b) (CMNH).
- *30. White-fronted Goose, *Anser albifrons albifrons* (Scopoli). A few Ohio records (Langdon 1879, Wheaton 1882, Hadelor 1930, Ball 1945, Clark 1946), and a skin (OSM), "Fairfield Co., Ohio," without date.
- *31. Lesser Snow Goose, *Chen hyperborea hyperborea* (Pallas).
- *32. Blue Goose, *Chen caerulescens* (Linnaeus).

- *33. Mallard, *Anas platyrhynchos platyrhynchos* Linnaeus.
- *34. Black Duck, *Anas rubripes* Brewster.
- *35. Gadwall, *Anas strepera* Linnaeus.
- *36. Pintail, *Anas acuta iztzihoa* Vieillot.
- *37. European Teal, *Anas crecca* Linnaeus. Recorded from Auglaize Co. (Walker 1931) (OSM), Buckeye Lake (Trautman 1932), and Youngstown (Baird 1935).
- *38. Green-winged Teal, *Anas carolinensis* Gmelin.
- *39. Blue-winged Teal, *Anas discors* Linnaeus. *
- *40. Cinnamon Teal, *Anas cyanoptera cyanoptera* Vieillot. One Ohio record, Buckeye Lake 4/4/95 (Davie 1898) (OSM).
- *41. European Widgeon, *Mareca penelope* (Linnaeus).
- *42. Baldpate, *Mareca americana* (Gmelin).
- *43. Shoveller, *Spatula clypeata* (Linnaeus).
- *44. Wood Duck, *Aix sponsa* (Linnaeus).
- *45. Redhead, *Aythya americana* (Eyton).
- *46. Ring-necked Duck, *Aythya collaris* (Donovan).
- *47. Canvasback, *Aythya valisineria* (Wilson).
- *48. Greater Scaup Duck, *Aythya marila nearctica* Stejneger. Rare.
- *49. Lesser Scaup Duck, *Aythya affinis* (Eyton).
- *50. American Golden-eye, *Bucephala clangula americana* (Bonaparte).
- *51. Buffle-head, *Bucephala albeola* (Linnaeus).
- *52. Old-squaw, *Clangula hyemalis* (Linnaeus).
- *53. King Eider, *Somateria spectabilis* (Linnaeus). Rare.
- *54. White-winged Scoter, *Melanitta deglandi* (Bonaparte).
- *55. Surf Scoter, *Melanitta perspicillata* (Linnaeus).
- *56. American Scoter, *Oidemia nigra americana* Swainson.
- *57. Ruddy Duck, *Oxyura jamaicensis rubida* (Wilson).
- *58. Hooded Merganser, *Lophodytes cucullatus* (Linnaeus).
- *59. American Merganser, *Mergus merganser americanus* Cassin.
- *60. Red-breasted Merganser, *Mergus serrator serrator* Linnaeus.
- *61. Eastern Turkey Vulture, *Cathartes aura septentrionalis* Wied.
- *62. Black Vulture, *Coragyps atratus* (Meyer). Southern Ohio only.
- *63. Eastern Goshawk, *Accipiter gentilis atricapillus* (Wilson). Rare.
- *64. Sharp-shinned Hawk, *Accipiter striatus velox* (Wilson).
- *65. Cooper's Hawk, *Accipiter cooperii* (Bonaparte).
- *66. Eastern Red-tailed Hawk, *Buteo jamaicensis borealis* (Gmelin). There are in the literature two Ohio records of the Western Red-tailed Hawk, *B. j. calurus* Cassin (Jones 1903, Henninger 1912), but the specimens on which these records are based (OSM) have been determined by Oberholser as *b. borealis*.
- *67. Northern Red-shouldered Hawk, *Buteo lineatus lineatus* (Gmelin).
- *68. Broad-winged Hawk, *Buteo platypterus platypterus* (Vieillot).
- *69. American Rough-legged Hawk, *Buteo lagopus sancti-johannis* (Gmelin).
- *70. Harris's Hawk, *Parabuteo unicinctus harrisi* (Audubon). One Ohio record, Harrisburg 12/24/17 (Earl 1918) (OM).
- *71. Golden Eagle, *Aquila chrysaetos canadensis* (Linnaeus). Rare.
- *72. Northern Bald Eagle, *Haliaeetus leucocephalus washingtonii* (Audubon).
- *73. Marsh Hawk, *Circus cyaneus hudsonicus* (Linnaeus).
- *74. Osprey, *Pandion haliaetus carolinensis* (Gmelin).
- 75. Gyrfalcon, *Falco rusticolus obsoletus* Gmelin. Three Ohio records: Fayette Co. 1/30/07 (Henninger 1911) (OSM), Wood Co. 12/10/42 (Moseley 1943), and Youngstown 4/22/34 (Baird 1934).
- *76. Duck Hawk, *Falco peregrinus anatum* Bonaparte. Rare.
- *77. Eastern Pigeon-Hawk, *Falco columbarius columbarius* Linnaeus.
- *78. Eastern Sparrow Hawk, *Falco sparverius sparverius* Linnaeus.
- *79. Eastern Ruffed Grouse, *Bonasa umbellus umbellus* (Linnaeus).

80. Greater Prairie Chicken, *Tympanuchus cupido pinnatus* (Brewster). Formerly fairly common in the state, but extirpated by about 1900; in 1933 reintroduced into Marion Co. (Trautman 1935c); some recent records from northwestern Ohio (Hicks 1935a and 1935b).
- *81. Hungarian Partridge, *Perdix perdix perdix* (Linnaeus). Introduced, and very local.
- *82. Eastern Bob-white, *Colinus virginianus virginianus* (Linnaeus). According to Aldrich (1946), the bob-white that occurs in Ohio is the Interior Bob-white, *C. v. mexicanus* (Linnaeus).†
- *83. Ring-necked Pheasant, *Phasianus colchicus* Linnaeus.
- *84. Sandhill Crane, *Grus canadensis tabida* (Peters). Rare.
- *85. King Rail, *Rallus elegans elegans* Audubon.
- *86. Virginia Rail, *Rallus limicola limicola* Vieillot.
- *87. Sora, *Porzana carolina* (Linnaeus).
- *88. Yellow Rail, *Coturnicops novaboracensis novaboracensis* (Gmelin). Rare. Bailey (1935) records *C. n. richi* Bailey† from Canton.
- *89. Black Rail, *Laterallus jamaicensis pygmaeus* (Blackwall). Rare.
- *90. Purple Gallinule, *Porphyryla martinica* (Linnaeus). Rare.
- *91. Florida Gallinule, *Gallinula chloropus cachinnans* Bangs.
- *92. American Coot, *Fulica americana americana* Gmelin.
- *93. Piping Plover, *Charadrius melodus* Ord.
- *94. Semipalmated Plover, *Charadrius hiaticula semipalmatus* Bonaparte.
95. Wilson's Plover, *Charadrius wilsonia wilsonia* Ord. One Ohio record, Lucas Co. 6/17/36 (Campbell 1936d) (OSM).
- *96. Killdeer, *Charadrius vociferus vociferus* Linnaeus.
- *97. American Golden Plover, *Pluvialis dominica dominica* (Müller).
- *98. Black-bellied Plover, *Squatarola squatarola* (Linnaeus).
- *99. Ruddy Turnstone, *Arenaria interpres morinella* (Linnaeus).
- *100. American Woodcock, *Philohela minor* (Gmelin).
101. European Woodcock, *Scolopax rusticola rusticola* Linnaeus. One Ohio record, Geauga Co. 11/6/35 (Aldrich 1936b) (CMNH).
- *102. Wilson's Snipe, *Capella gallinago delicata* (Ord).
- *103. Hudsonian Curlew, *Numenius phaeopus hudsonicus* Latham.
- *104. Upland Plover, *Bartramia longicauda* (Bechstein).
- *105. Spotted Sandpiper, *Actitis macularia* (Linnaeus).
- *106. Eastern Solitary Sandpiper, *Tringa solitaria solitaria* Wilson.
- *107. Western Willet, *Catoptrophorus semipalmatus inornatus* (Brewster).
- *108. Greater Yellowlegs, *Totanus melanoleucus* (Gmelin).
- *109. Lesser Yellowlegs, *Totanus flavipes* (Gmelin).
- *110. American Knot, *Calidris canutus rufa* (Wilson). Rare.
111. Purple Sandpiper, *Erolia maritima* (Brünnich). Several records from northern Ohio (Trautman 1944 (OSM), Doolittle 1916 and 1924b, Hill 1943, Mayfield 1949).
- *112. Pectoral Sandpiper, *Erolia melanotos* (Vieillot).
- *113. White-rumped Sandpiper, *Erolia fuscicollis* (Vieillot).
- *114. Baird's Sandpiper, *Erolia bairdii* (Coues).
- *115. Least Sandpiper, *Erolia minutilla* (Vieillot).
- *116. Red-backed Sandpiper, *Erolia alpina pacifica* (Coues).
- *117. Dowitcher, *Limnodromus griseus* (Gmelin). Most of the Ohio records of this species, including those from central Ohio, refer to the Eastern Dowitcher, *L. g. griseus*; the Long-billed Dowitcher, *L. g. scolopaceus* (Say), has been recorded from northern Ohio (Campbell and Campbell 1935 (OSM), Hicks 1938b, Campbell 1940).
- *118. Stilt Sandpiper, *Micropalama himantopus* (Bonaparte).
- *119. Semipalmated Sandpiper, *Ereunetes pusillus* (Linnaeus).
- *120. Western Sandpiper, *Ereunetes mauri* Cabanis.
- *121. Buff-breasted Sandpiper, *Tryngites subruficollis* (Vieillot). Rare.
- *122. Marbled Godwit, *Limosa fedoa* (Linnaeus). Rare.
- *123. Hudsonian Godwit, *Limosa haemastica* (Linnaeus). Rare.

- *124. Ruff, *Philomachus pugnax* (Linnaeus). Two Ohio records: Buckeye Lake 11/10/72 (Wheaton 1882) (OSM), and Columbus 4/28/78 (Jones 1903) (OSM).
- *125. Sanderling, *Crocethia alba* (Pallas).
126. Avocet, *Recurvirostra americana* (Gmelin). Several Ohio records (Jones 1903 (OSM), Baird 1936 (OSM), Hicks 1937a, Campbell 1940, Mayfield 1944b).
- *127. Red Phalarope, *Phalaropus fulicarius* (Linnaeus). Rare.
- *128. Wilson's Phalarope, *Steganopus tricolor* Vieillot.
- *129. Northern Phalarope, *Lobipes lobatus* (Linnaeus).
- *130. Parasitic Jaeger, *Stercorarius parasiticus* (Linnaeus). Rare.
- *131. Long-tailed Jaeger, *Stercorarius longicaudus* Vieillot. One Ohio record, Buckeye Lake 9/5/28 (Trautman and Walker 1930) (OSM).
132. Glaucous Gull, *Larus hyperboreus hyperboreus* Gunnerus. Recorded along Lake Erie (Campbell and Campbell 1934a, Hicks 1936 (OSM), Skaggs 1937, Campbell 1940 (OSM), Mayfield 1943b (OSM)).
- *133. Great Black-backed Gull, *Larus marinus* Linnaeus. Most of the Ohio records are from Lake Erie.
- *134. American Herring Gull, *Larus argentatus smithsonianus* Coues.
- *135. Ring-billed Gull, *Larus delawarensis* Ord.
- *136. Franklin's Gull, *Larus pipixcan* Wagler. Rare.
- *137. Bonaparte's Gull, *Larus philadelphia* (Ord).
- *138. Atlantic Kittiwake, *Rissa tridactyla tridactyla* (Linnaeus). Casual.
- *139. Sabine's Gull, *Xema sabini sabini* (Sabine). Casual.
- *140. Forster's Tern, *Sterna forsteri* Nuttall. Rare.
- *141. Common Tern, *Sterna hirundo hirundo* Linnaeus.
- *142. Interior Least Tern, *Sterna albifrons athalassos* Burleigh and Lowery. Casual; several records from Lucas Co. (Campbell 1935 and 1940) (OSM), one record from central Ohio (Trautman 1940), and one record from Hamilton Co. (Langdon 1879) (OSM).
- *143. Caspian Tern, *Hydroprogne caspia* (Pallas).
- *144. Black Tern, *Chlidonias niger surinamensis* (Gmelin).
145. Brünnich's Murre, *Uria lomvia lomvia* (Linnaeus). Several Ohio records, mostly from Lake Erie (Davie 1898 (OSM), Jones 1903, Sim 1908, Moseley 1908, Doolittle 1924a, Hicks 1935b).
- *146. Domestic Pigeon, *Columba livia* Gmelin.
- *147. Eastern Mourning Dove, *Zenaidura macroura carolinensis* (Linnaeus).
- *148. Yellow-billed Cuckoo, *Coccyzus americanus americanus* (Linnaeus).
- *149. Black-billed Cuckoo, *Coccyzus erythrophthalmus* (Wilson).
- *150. Barn Owl, *Tyto alba pratincola* (Bonaparte).
- *151. Eastern Screech Owl, *Otus asio naevius* (Gmelin).
- *152. Great Horned Owl, *Bubo virginianus virginianus* (Gmelin).
- *153. Snowy Owl, *Nyctea sandiaca* (Linnaeus). Rare winter visitor.
- *154. Northern Barred Owl, *Strix varia varia* Barton.
- *155. Long-eared Owl, *Asio otus wilsonianus* (Lesson).
- *156. Short-eared Owl, *Asio flammeus flammeus* (Pontoppidan).
- *157. Saw-whet Owl, *Aegolius acadicus acadicus* (Gmelin).
158. Chuck-will's-widow, *Caprimulgus carolinensis* Gmelin. Reported from southern Ohio (Thomas 1932 (OSM), Blincoe 1933, Hicks 1935a).
- *159. Eastern Whip-poor-will, *Caprimulgus vociferus vociferus* Wilson.
- *160. Nighthawk, *Chordeiles minor* (Forster). Most of the Ohio records, including those from central Ohio, refer to the Eastern Nighthawk, *C. m. minor*, but Sennett's Nighthawk, *C. m. sennetti* Coues, has been reported from Pike Co. (Hicks 1938c) (OSM), and from Cleveland (Aldrich 1936c) (CMNH).
- *161. Chimney Swift, *Chaetura pelagica* (Linnaeus).
- *162. Ruby-throated Hummingbird, *Archilochus colubris* (Linnaeus).
- *163. Eastern Belted Kingfisher, *Megasceryle alcyon alcyon* (Linnaeus).
- *164. Northern Flicker, *Colaptes auratus luteus* Bangs.

- *165. Pileated Woodpecker, *Dryocopus pileatus* (Linnaeus). The subspecific status of the Ohio birds is somewhat questionable, but those in central Ohio are probably the Southern Pileated Woodpecker, *D. p. pileatus* (Trautman 1940). The Northern Pileated Woodpecker, *D. p. abieticola* (Bangs), has been reported from Ohio (Hicks 1935a and 1935b, Campbell 1940) (OSM).
- *166. Eastern Red-bellied Woodpecker, *Centurus carolinus carolinus* (Linnaeus).
- *167. Red-headed Woodpecker, *Melanerpes erythrocephalus erythrocephalus* (Linnaeus).
- *168. Yellow-bellied Sapsucker, *Sphyrapicus varius varius* (Linnaeus).
- *169. Eastern Hairy Woodpecker, *Dendrocopos villosus villosus* (Linnaeus).
- *170. Downy Woodpecker, *Dendrocopos pubescens* (Linnaeus). Most of the Ohio records of this species refer to the Northern Downy Woodpecker, *D. p. medianus* (Swainson); there is one Ohio record of the Southern Downy Woodpecker, *D. p. pubescens*, Lawrence Co. 5/2/36 (Hicks 1939) (OSM).
- *171. Northern Red-cockaded Woodpecker, *Dendrocopos borealis borealis* (Vieillot). One Ohio record, Columbus 3/15/72 (Jones 1903) (OSM).
- *172. Eastern Kingbird, *Tyrannus tyrannus* (Linnaeus).
- *173. Arkansas Kingbird, *Tyrannus verticalis* Say. Several Lucas Co. records (Campbell 1940) (OSM), one Hamilton Co. record (Kemsies 1948), and two central Ohio records.
- *174. Northern Crested Flycatcher, *Myiarchus crinitus boreus* Bangs.
- *175. Eastern Phoebe, *Sayornis phoebe* (Latham).
- *176. Yellow-bellied Flycatcher, *Empidonax flaviventris* (Baird and Baird).
- *177. Acadian Flycatcher, *Empidonax virescens* (Vieillot).
- *178. Alder Flycatcher, *Empidonax traillii traillii* (Audubon).
- *179. Least Flycatcher, *Empidonax minimus* (Baird and Baird).
- *180. Wood Pewee, *Contopus virens* (Linnaeus).
- *181. Olive-sided Flycatcher, *Nuttallornis borealis* (Swainson).
- *182. Horned Lark, *Eremophila alpestris* (Linnaeus). Three subspecies occur in Ohio: the Northern Horned Lark, *E. a. alpestris*, the Prairie Horned Lark, *E. a. praticola* (Henshaw), and Hoyt's Horned Lark, *E. a. hoyti* (Bishop). The latter subspecies is relatively rare in Ohio. (See Walker and Trautman 1936.)
- *183. Tree Swallow, *Iridoprocne bicolor* (Vieillot).
- *184. Bank Swallow, *Riparia riparia riparia* (Linnaeus).
- *185. Rough-winged Swallow, *Stelgidopteryx ruficollis serripennis* (Audubon).
- *186. Barn Swallow, *Hirundo rustica erythrogaster* Boddaert.
- *187. Northern Cliff Swallow, *Petrochelidon pyrrhonota albifrons* (Rafinesque).
- *188. Purple Martin, *Progne subis subis* (Linnaeus).
- *189. Northern Blue Jay, *Cyanocitta cristata bromia* Oberholser.
- *190. Eastern Crow, *Corvus brachyrhynchos brachyrhynchos* Brehm.
- 191. Southern Raven, *Corvus corax europhilus* Oberholser. Once a fairly common bird in Ohio, apparently extirpated in the state about fifty years ago, but it occurs rarely today and may be on the increase. One wintered at Put-in-Bay a few years ago.
- *192. Black-capped Chickadee, *Parus atricapillus* Linnaeus. The records of this species from central and southern Ohio refer to the Appalachian Black-capped Chickadee, *P. a. praticus* (Oberholser); those from northern Ohio refer to this race, to the Eastern Black-capped Chickadee, *P. a. atricapillus*, or to intermediates between *atricapillus* and *praticus* (Oberholser 1937, Duvall 1945).
- *193. Northern Carolina Chickadee, *Parus carolinensis extimus* Todd and Sutton.
- 194. Hudsonian Chickadee, *Parus hudsonicus hudsonicus* Forster. One Ohio record, Turtle Island (on Ohio-Michigan line) 11/6/43 (Mayfield 1944a) (UM).
- *195. Tufted Titmouse, *Parus bicolor* Linnaeus.
- *196. Northern White-breasted Nuthatch, *Sitta carolinensis cookei* Oberholser. Aldrich (1944a) calls this subspecies the Eastern White-breasted Nuthatch.
- *197. Red-breasted Nuthatch, *Sitta canadensis* Linnaeus.
- *198. Northern Brown Creeper, *Certhia familiaris americana* Bonaparte.
- *199. House Wren, *Troglodytes aedon* Vieillot. Most of the Ohio records of this species refer to the Ohio House Wren, *T. a. baldwini* Oberholser; there is one Ohio record of the

- Eastern House Wren, *T. a. aëdon*, Cleveland 5/19/33 (Oberholser 1934) (CMNH). Oberholser (1934) and Aldrich (1936a) call this species *T. domesticus* (Wilson).†
- *200. Eastern Winter Wren, *Troglodytes troglodytes hiemalis* Vieillot.
- *201. Appalachian Bewick's Wren, *Thryomanes bewickii altus* Aldrich.
- *202. Northern Carolina Wren, *Thryothorus ludovicianus ludovicianus* (Latham). According to Lowery (1940), the Carolina Wren in Ohio is *T. l. carolinianus* (Wilson); according to Godfrey (1946), it is *T. l. ludovicianus*.
- *203. Prairie Marsh Wren, *Telmatochlamys palustris dissaëptus* (Bangs).
- *204. Short-billed Marsh Wren, *Cistothorus platensis stellaris* (Naumann).
- *205. Eastern Mockingbird, *Mimus polyglottos polyglottos* (Linnaeus).
- *206. Catbird, *Dumetella carolinensis* (Linnaeus).
- *207. Eastern Brown Thrasher, *Toxostoma rufum rufum* (Linnaeus).
- *208. Robin, *Turdus migratorius* Linnaeus. Most of the Ohio records of this species refer to the Eastern Robin, *T. m. migratorius*. The Southern Robin, *T. m. achrusterus* (Batchelder), has been recorded in southern Ohio (Henninger 1907, Kemsies 1948, Kemsies and Dreyer 1948 (UCM)), and the Black-backed Robin, *T. m. nigrideus* Aldrich and Nutt, has been recorded in Geauga Co. (Aldrich and Nutt 1939) (CMNH).
- *209. Wood Thrush, *Hylocichla mustelina* (Gmelin).
- *210. Eastern Hermit Thrush, *Hylocichla guttata faxoni* Bangs and Penard. There is one Ohio record of the Cascade Hermit Thrush, *H. g. oromela* Oberholser†, Bay Point 4/7/32 (Aldrich 1936a) (CMNH).
- *211. Olive-backed Thrush, *Hylocichla ustulata swainsoni* (Tschudi).
- *212. Gray-cheeked Thrush, *Hylocichla minima minima* (Lafresnaye). There is one Ohio record of Bicknell's Thrush, *H. m. bicknelli* Ridgway, Lucas Co. 9/29/33 (Campbell 1934) (OSM).
- *213. Veery, *Hylocichla fuscescens* (Stephens). The Ohio birds of this species represent both the Veery (*H. f. fuscescens*) and the Willow Thrush (*H. f. salicicola* Ridgway), and intermediates between the two. These forms probably occur in about equal numbers in the state.
- *214. Eastern Bluebird, *Sialia sialis sialis* (Linnaeus).
- *215. Blue-gray Gnatcatcher, *Polioptila caerulea caerulea* (Linnaeus).
- *216. Eastern Golden-crowned Kinglet, *Regulus satrapa satrapa* Lichtenstein.
- *217. Eastern Ruby-crowned Kinglet, *Regulus calendula calendula* (Linnaeus).
- *218. American Pipit, *Anthus spinoletta rubescens* (Tunstall).
- *219. Cedar Waxwing, *Bombicilla cedrorum* Vieillot.
- *220. Northern Shrike, *Lanius excubitor borealis* Vieillot. Casual winter visitor.
- *221. Migrant Shrike, *Lanius ludovicianus migrans* Palmer.
- *222. Starling, *Sturnus vulgaris vulgaris* Linnaeus.
- *223. Northern White-eyed Vireo, *Vireo griseus novaboracensis* (Gmelin).
- *224. Yellow-throated Vireo, *Vireo flavifrons* Vieillot.
- *225. Blue-headed Vireo, *Vireo solitarius* (Wilson). The migrants of this species appear to include both the typical form (*V. s. solitarius*) and the Mountain Vireo (*V. s. alticola* Brewster), as the latter is the form which nests in northwestern Ohio.
- *226. Red-eyed Vireo, *Vireo olivaceus* (Linnaeus).
- *227. Philadelphia Vireo, *Vireo philadelphicus* (Cassin).
- *228. Eastern Warbling Vireo, *Vireo gilvus gilvus* (Vieillot).
- *229. Black and White Warbler, *Mniotilta varia* (Linnaeus).
- *230. Prothonotary Warbler, *Protonotaria citrea* (Boddaert).
231. Swainson's Warbler, *Limnothlypis swainsonii* (Audubon). One Ohio record, Lawrence Co. 6/21/47 (Green 1947) (OSM).
- *232. Worm-eating Warbler, *Helmitheros vermivorus* (Gmelin).
- *233. Golden-winged Warbler, *Vermivora chrysoptera* (Linnaeus).
- *234. Blue-winged Warbler, *Vermivora pinus* (Linnaeus).
- *235. Tennessee Warbler, *Vermivora peregrina* (Wilson).
- *236. Orange-crowned Warbler, *Vermivora celata celata* (Say).
- *237. Nashville Warbler, *Vermivora ruficapilla ruficapilla* (Wilson).

- *238. Northern Parula Warbler, *Parula americana pusilla* (Wilson). Some birds from central Ohio are intermediate between *P. a. pusilla* and *P. a. americana* (Linnaeus) (the Southern Parula Warbler) (Trautman 1940).
- *239. Eastern Yellow Warbler, *Dendroica petechia aestiva* (Gmelin). The Newfoundland Yellow Warbler, *D. p. amnicola* Batchelder, has been recorded from Lebanon (Kemsies and Dreyer 1948) (UCM).
- *240. Magnolia Warbler, *Dendroica magnolia* (Wilson).
- *241. Cape May Warbler, *Dendroica tigrina* (Gmelin).
- *242. Black-throated Blue Warbler, *Dendroica caerulescens caerulescens* (Gmelin).
- *243. Myrtle Warbler, *Dendroica coronata coronata* (Linnaeus). There is one Ohio record of the Alaska Myrtle Warbler, *D. c. hooveri* McGregor, 15 miles north of Cincinnati Oct. 1948 (Kemsies, personal communication).
- *244. Black-throated Green Warbler, *Dendroica virens virens* (Gmelin).
- *245. Cerulean Warbler, *Dendroica cerulea* (Wilson).
- *246. Blackburnian Warbler, *Dendroica fusca* (Müller).
- *247. Sycamore Warbler, *Dendroica dominica albiflora* Ridgway. Casual north of central Ohio.
- *248. Chestnut-sided Warbler, *Dendroica pennsylvanica* (Linnaeus).
- *249. Bay-breasted Warbler, *Dendroica castanea* (Wilson).
- *250. Black-poll Warbler, *Dendroica striata* (Forster).
- *251. Northern Pine Warbler, *Dendroica pinus pinus* (Wilson).
- *252. Kirtland's Warbler, *Dendroica kirtlandii* (Baird). Rare.
- *253. Northern Prairie Warbler, *Dendroica discolor discolor* (Vieillot).
- *254. Palm Warbler, *Dendroica palmarum* (Gmelin). Most of the Ohio records of this species refer to the Western Palm Warbler, *D. p. palmarum*; there are four records from northern Ohio of the Yellow Palm Warbler, *D. p. hypochrysea* Ridgway: Oberlin 4/16/92 (McCormick 1892) (OM), Lucas Co. 10/25/35 (Campbell 1936b) (OSM), South Bass Island 4/4/44 (Mayfield 1944b) (OSM), and Put-in-Bay 5/1/49 (Mayfield 1949).
- *255. Eastern Ovenbird, *Seiurus aurocapillus aurocapillus* (Linnaeus).
- *256. Water-Thrush, *Seiurus novaboracensis* (Gmelin). Both the Northern Water-Thrush, *S. n. novaboracensis*, and Grinnell's Water-Thrush, *S. n. notabilis* Ridgway, occur in Ohio, but the latter subspecies appears to be the more common migrant and is also the breeding form (Aldrich 1934, Trautman 1940).
- *257. Louisiana Water-Thrush, *Seiurus motacilla* (Vieillot).
- *258. Kentucky Warbler, *Oporornis formosus* (Wilson).
- *259. Connecticut Warbler, *Oporornis agilis* (Wilson).
- *260. Mourning Warbler, *Oporornis philadelphia* (Wilson).
- *261. Northern Yellowthroat, *Geothlypis trichas brachydactyla* (Swainson). There is one Ohio record of the Maryland Yellowthroat, *G. t. trichas* (Linnaeus), Cincinnati 7/20/07 (Kemsies and Dreyer 1948) (UCM).
- *262. Yellow-breasted Chat, *Icteria virens virens* (Linnaeus).
- *263. Hooded Warbler, *Wilsonia citrina* (Boddaert).
- *264. Wilson's Warbler, *Wilsonia pusilla pusilla* (Wilson).
- *265. Canada Warbler, *Wilsonia canadensis* (Linnaeus).
- *266. American Redstart, *Setophaga ruticilla ruticilla* (Linnaeus). Four specimens of the Northern Redstart, *S. r. tricolora* (Muller) have been taken near Cincinnati, one in Oct. 1948 and three in the fall of 1949 (Kemsies, personal communication).
- *267. English Sparrow, *Passer domesticus domesticus* (Linnaeus).
- *268. Bobolink, *Dolichonyx oryzivorus* (Linnaeus).
- *269. Eastern Meadowlark, *Sturnella magna magna* (Linnaeus).
- *270. Western Meadowlark, *Sturnella neglecta* Audubon. Rare.
- *271. Yellow-headed Blackbird, *Xanthocephalus xanthocephalus* (Bonaparte). Rare.
- *272. Redwing, *Agelaius phoeniceus* (Linnaeus). Most of the Ohio records of this species refer to the Eastern Redwing, *A. p. phoeniceus*. The Giant Redwing, *A. p. arctolegus* Oberholser, has been recorded from central Ohio (Trautman 1935c) (OSM) and

- northern Ohio (Campbell and Campbell 1934b (OSM), Campbell 1936a, Aldrich 1932a).
- *273. Orchard Oriole, *Icterus spurius* (Linnaeus).
 - *274. Baltimore Oriole, *Icterus galbula* (Linnaeus).
 - *275. Rusty Blackbird, *Euphagus carolinus* (Müller).
 - 276. Brewer's Blackbird, *Euphagus cyanocephalus* (Wagler). Recorded only from Lucas Co. (Campbell 1936e (OSM) and 1940, Walker 1942, Mayfield 1949).
 - *277. Bronzed Grackle, *Quiscalus quiscula versicolor* Vieillot.
 - *278. Eastern Cowbird, *Molothrus ater ater* (Boddaert).
 - *279. Scarlet Tanager, *Piranga olivacea* (Gmelin).
 - *280. Summer Tanager, *Piranga rubra rubra* (Linnaeus). Casual north of central Ohio.
 - *281. Eastern Cardinal, *Richmondena cardinalis cardinalis* (Linnaeus).
 - *282. Rose-breasted Grosbeak, *Phœticus ludovicianus* (Linnaeus).
 - 283. Eastern Blue Grosbeak, *Guiraca caerulea caerulea* (Linnaeus). Reported breeding in Adams Co. (Hicks 1945) (OSM); several sight records from northern Ohio (Campbell 1940, Wharram 1921, Doolittle 1926).
 - *284. Indigo Bunting, *Passerina cyanea* (Linnaeus).
 - *285. Dickcissel, *Spiza americana* (Gmelin).
 - *286. Eastern Evening Grosbeak, *Hesperiphona vespertina vespertina* (Cooper). Irregular winter visitor.
 - *287. Eastern Purple Finch, *Carpodacus purpureus purpureus* (Gmelin).
 - 288. Newfoundland Pine Grosbeak, *Pinicola enucleator eschatosus* Oberholser. Several winter records from northern Ohio (Jones 1903, Doolittle 1919, Fordyce 1916, Van Tyne 1934 (OSM), Campbell 1940 (OSM)).
 - 289. Hoary Redpoll, *Acanthis hornemanni exilipes* (Coues). Two Ohio records: Lucas Co. 3/16/31 (OSM) and 3/29/31 (seen) (Hicks 1934a).
 - *290. Redpoll, *Acanthis flammea* (Linnaeus). Most of the Ohio records of this species refer to the Common Redpoll, *A. f. flammea*; the Greater Redpoll, *A. f. rostrata* (Coues), has been reported from Lucas Co. (Trautman 1935c (OSM), Campbell 1940).
 - *291. Pine Siskin, *Spinus pinus pinus* (Wilson).
 - *292. Eastern Goldfinch, *Spinus tristis tristis* (Linnaeus).
 - *293. Eastern Red Crossbill, *Loxia curvirostra minor* (Brehm). Rare winter visitor.
 - *294. White-winged Crossbill, *Loxia leucoptera leucoptera* Gmelin. Rare winter visitor.
 - *295. Red-eyed Towhee, *Pipilo erythrophthalmus erythrophthalmus* (Linnaeus).
 - 296. Lark Bunting, *Calamospiza melanocorys* Stejneger. A few northern Ohio records (Skaggs 1945 (CMNH), Hicks 1946 (OSM)).
 - *297. Savannah Sparrow, *Passerculus sandwichensis* (Gmelin). Five subspecies have been recorded from Ohio: the Eastern Savannah Sparrow, *P. s. savanna* (Wilson) (OSM), the Labrador Savannah Sparrow, *P. s. labradorius* Howe (OSM), the Churchill Savannah Sparrow, *P. s. oblitus* Peters and Griscom (OSM), the Southeastern Savannah Sparrow, *P. s. mediogriseus* Aldrich† (Aldrich 1940) (CMNH), and the Nevada Savannah Sparrow, *P. s. nevadensis* Grinnell (CMNH). According to Aldrich (1940), the breeding form (in northeastern Ohio) is the Southeastern Savannah Sparrow, and the other subspecies are migrants.
 - *298. Eastern Grasshopper Sparrow, *Ammodramus savannarum pratensis* (Vieillot).
 - *299. Leconte's Sparrow, *Passerherbulus caudacutus* (Latham). Rare.
 - *300. Western Henslow's Sparrow, *Passerherbulus henslowii henslowii* (Audubon).
 - *301. Sharp-tailed Sparrow, *Ammospiza caudacuta* (Gmelin). Most of the Ohio records of this species refer to Nelson's Sparrow, *A. c. nelsoni* (Allen); there is one Ohio record of the Acadian Sharp-tailed Sparrow, *A. c. subvirgata* (Dwight), Lake Co. 9/20/31 (Aldrich 1936a) (CMNH).
 - *302. Eastern Vesper Sparrow, *Pooecetes gramineus gramineus* (Gmelin).
 - *303. Eastern Lark Sparrow, *Chondestes grammacus grammacus* (Say). Rare in central and northern Ohio.
 - *304. Bachman's Sparrow, *Aimophila aestivalis bachmanii* (Audubon). Occurs only in central and southern Ohio.

- *305. Slate-colored Junco, *Junco hyemalis hyemalis* (Linnaeus). There are two Ohio records of the Intermediate (or Cassiar) Junco, *J. h. connectans* Coues (= *J. h. cismontanus* Dwight), Lucas Co. 3/31/35 (Campbell 1936c) (OSM), and Columbus 4/4/46 (OSM).
- *306. Oregon Junco, *Junco oreganus* (Townsend). This species has been reported from Lucas Co. (Campbell 1937a and 1940), Butler Co. (Hefner and Mattox 1943), Akron (Mayfield 1944b, 1948, and 1949), South Bass Island (OSM) and Columbus (OSM). Campbell records the subspecies as *shufeldti* Coale (Shufeldt's Junco), but the specimens in the Ohio State Museum from Lucas Co., South Bass Island, and Columbus are labelled by A. H. Miller as the subspecies *montanus* Ridgway (Montana Junco). One specimen in the Ohio State Museum, No. 7735, a male from Columbus 11/26/45, is labelled by Miller "*J. h. cismontanus* x *J. o. montanus*."
- *307. Eastern Tree Sparrow, *Spizella arborea arborea* (Wilson).
- *308. Eastern Chipping Sparrow, *Spizella passerina passerina* (Bechstein).
- 309. Clay-colored Sparrow, *Spizella pallida* (Swainson): One Ohio record, South Bass Island 5/12/40 (Walker 1941a) (OSM).
- *310. Eastern Field Sparrow, *Spizella pusilla pusilla* (Wilson).
- *311. Harris's Sparrow, *Zonotrichia querula* (Nuttall). Casual.
- *312. White-crowned Sparrow, *Zonotrichia leucophrys leucophrys* (Forster). There are a number of scattered Ohio records of Gambel's Sparrow, *Z. l. gambelii* (Nuttall) (Trautman 1935c (OSM), Stewart 1933, Walker 1940, Campbell 1940, and Kemsies 1948).
- *313. White-throated Sparrow, *Zonotrichia albicollis* (Gmelin).
- *314. Eastern Fox Sparrow, *Passerella iliaca iliaca* (Merrem).
- *315. Lincoln's Sparrow, *Melospiza lincolni lincolni* (Audubon).
- *316. Eastern Swamp Sparrow, *Melospiza georgiana georgiana* (Latham).
- *317. Mississippi Song Sparrow, *Melospiza melodia euphonia* Wetmore.
- *318. Lapland Longspur, *Calcarius lapponicus lapponicus* (Linnaeus). There is one Ohio record of the Alaska Longspur, *C. l. alasensis* Ridgway, Columbus 2/19/75 (Wetmore 1943c) (USNM).
- 319. Smith's Longspur, *Calcarius pictus* (Swainson). Recorded from Oxford 4/9-30/49 (Mayfield 1949) (OSM) and Ashtabula Co. (Hicks 1935b).
- *320. Snow Bunting, *Plectrophenax nivalis nivalis* (Linnaeus).

II. Hypothetical List

In addition to the species listed above, the following species have been recorded from Ohio. These species are either based on old records of specimens that cannot now be located, or on sight records.

1. Wilson's Petrel, *Oceaniles oceanicus oceanicus* (Kuhl). One record, Auglaize Co. 7/7/07 (Henninger 1907).
2. Man-o'-war-bird, *Fregata magnificens rothschildi* Mathews. One record, Fairfield Co., spring of 1880 (Davie 1898).
3. Great White Heron, *Ardea occidentalis occidentalis* Audubon. A bird of this species was seen on the Ohio side of Lake Pymatuning in May, 1938, and was collected on the Pennsylvania side of the lake near Linesville on May 14, 1938 (Trimble 1940).
- *4. Hutchins's Goose, *Branta canadensis hutchinsi* (Richardson). A few records from northern Ohio (Wheaton 1882, Campbell 1940), and one record from central Ohio (Trautman 1940).
5. Barrow's Golden-eye, *Bucephala islandica* (Gmelin). Several northern Ohio records (Hasbrouck 1944a).
6. Eastern Harlequin Duck, *Histrionicus histrionicus histrionicus* (Linnaeus). One Ohio record, a bird seen near Dayton 2/13/49 (Mayfield 1949).
- *7. American Eider, *Somateria mollissima dresseri* Sharpe. One Ohio record, Buckeye Lake 11/11/95 (Davie 1898).
8. Prairie Falcon, *Falco mexicanus* Schlegel. One Ohio record, Oberlin 9/20/40 (Jones 1941).
- *9. Long-billed Curlew, *Numenius americanus americanus* Bechstein. A few records from central Ohio (Walker 1928a, Trautman 1940) and Cincinnati (Langdon 1879).

10. Black-necked Stilt, *Himantopus mexicanus* (Müller). Recorded from Cincinnati (Langdon 1879), Lake Erie (Jones 1903), and Cleveland (Walker 1941b).
11. Pomarine Jaeger, *Stercorarius pomarinus* (Temminck). Casual in northern Ohio (Wheaton 1882, Jones 1903, Hicks 1935b).
12. Northern Skua, *Catharacta skua skua* Brünnich. One Ohio record, Lucas Co. 9/13/39 (Campbell 1940).
- *13. Iceland Gull, *Larus leucopterus leucopterus* (Vieillot). Recorded from Lucas Co. (Campbell 1940), Ashtabula (Skaggs 1937), Lorain (Jones 1903), Put-in-Bay and Lake St. Marys (Mayfield 1949), and central Ohio (Trautman 1940, Walker 1941b).
- *14. Little Gull, *Larus minutus* Pallas. Three Ohio records: Lake Co. 12/29/23 (Doolittle 1924c), Ashtabula Co. 12/23/47 (Hicks, Aud. Field Notes, 2: 75), and Delaware Co. 3/22/49 (seen by Mrs. E. S. Thomas and Mrs. J. M. Hengst).
15. Gull-billed Tern, *Gelochelidon nilotica aranea* (Wilson). Recorded from Cleveland (Wheaton 1882).
16. Roseate Tern, *Larus dougallii dougallii* Montagu. Recorded from Cincinnati (Langdon 1879), Cleveland (Wheaton 1882), and Lake Co. 7/31/19 (Doolittle 1920a).
17. American Hawk Owl, *Surnia ulula caparoch* (Müller). One fairly definite Ohio record, Lorain Co. (Jones 1903), and several other Ohio records which are somewhat indefinite (Wheaton 1882, Kirkpatrick 1859, Dawson 1903).
18. Western Burrowing Owl, *Speotyto cunicularia hypugaea* (Bonaparte). One Ohio record, Paulding Co., October 1944 (Price 1946b).
19. Great Gray Owl, *Strix nebulosa nebulosa* Forster. Several records, mostly from northern Ohio in winter (Langdon 1879, Wheaton 1882, Jones 1903, Dawson 1903).
20. Richardson's Owl, *Aegolius funereus richardsoni* (Bonaparte). Reported from Ohio by Coues (1874), but the record is doubtful (see Wheaton 1882 and Jones 1903).
21. Texas Woodpecker, *Dendrocopos scalaris symblectus* (Oberholser). One Ohio record, Winesburg (Holmes Co.) (Baird 1934).
22. Arctic Three-toed Woodpecker, *Picoides arcticus* (Swainson). Several records from northern Ohio (Wheaton 1882, Jones 1903, Doolittle 1918, Hicks 1935b, Campbell 1940).
- *23. Scissor-tailed Flycatcher, *Muscivora forficata* (Gmelin). Three Ohio records: Marietta 5/20/94 (Davie 1898), Marysville, May, 1903 (Jones 1905), and Pickaway Co. 7/1/34 (a bird seen by T. R. Lathrop).
24. Brown-headed Nuthatch, *Sitta pusilla pusilla* Latham. Reported from northern Ohio by Wheaton (1882).
25. Townsend's Solitaire, *Myadestes townsendi* (Audubon). Several records from Lucas Co. (Campbell 1940).
26. Bohemian Waxwing, *Bombycilla garrulus pallidiceps* Reichenow. Reported from Lucas Co. (Campbell 1940), Ashtabula Co. (Wharram 1921), Lake Co. (Doolittle 1920b), Logan Co. (Curl 1932), and Hamilton Co. (Kemsies 1948).
27. Audubon's Warbler, *Dendroica auduboni auduboni* (Townsend). Three records, from northern Ohio: Cleveland 4/30/31 and 5/3/31 (Watterson 1931), and Lake Co. 10/5/41 (Godfrey 1943a).
- *28. Arctic Towhee, *Pipilo maculatus arcticus* (Swainson). Reported seen along the Scioto River, Delaware Co., 3/29/46 by Charles F. Walker, Gene Rea, and Nelson Thomson.

III. Extirpated Species

1. Cory's Least Bittern, *Ixobrychus neoxenus* (Cory). One Ohio record, Toledo 5/25/07 (Ruthven 1907) (UM). Some thirty specimens of this bird are known, collected between 1885 and 1915, and although the A. O. U. considers it a color phase of *I. exilis*, many ornithologists believe it to be a good species that has disappeared.
2. Trumpeter Swan, *Cygnus buccinator* Richardson. Last Ohio record about 1900 (Henninger 1919, Trautman 1940).
3. Swallow-tailed Kite, *Elanoides forficatus forficatus* (Linnaeus). Last Ohio specimen in 1898 (Thomas 1933), and a sight record in 1928 (Gordon 1928).
4. Eastern Turkey, *Meleagris gallopavo silvestris* Vieillot. This species disappeared from

Ohio about 1900; it has recently been introduced, and has apparently become established, on Rattlesnake Island, in Lake Erie.

5. Whooping Crane, *Grus americana* (Linnaeus). Formerly a rare migrant; the last definite Ohio record 11/26/76 (Wheaton 1882).
6. Eskimo Curlew, *Numenius borealis* (Forster). Disappeared from Ohio about 70 years ago; a late record, 1878 (Langdon 1879).
7. Passenger Pigeon, *Ectopistes migratorius* (Linnaeus). The last Ohio specimen was collected 3/24/00 (OSM).
8. Louisiana Paroquet, *Conuropsis carolinensis ludovicianus* (Gmelin). Last Ohio record 10/9/84 (Jones 1903).

IV. Exotics

- *1. Mute Swan, *Cygnus olor* (Gmelin). Introduced, and very local.
2. Flamingo, *Phoenicopterus ruber* Linnaeus. An individual said to have escaped from the Cincinnati Zoo was seen in the late summer of 1926 in the southwestern part of the state (Trautman 1935a).
- *3. Black Swan, *Chenopsis atrata* (Latham). Two were seen on East Harbor, Ottawa Co., during late October and early November of 1925 (Trautman 1935a).
4. Baitul Teal, *Anas formosum* Georgi. A male of this species was seen on the Scioto River in Delaware Co., during late March and early April of 1933 (Trautman 1935a).
5. Sharp-tailed Grouse, *Peduceetes phasianellus* (Linnaeus). The Northern Sharp-tailed Grouse, *P. p. phasianellus*, and the Columbian Sharp-tailed Grouse, *P. p. columbianus* (Ord.), have been introduced into Lucas Co. (Campbell 1940) and elsewhere in the state.
6. Band-tailed Pigeon, *Columba fasciata fasciata* (Say). At least two have been seen in the vicinity of Columbus in the last fifty years (Trautman 1935a).
7. American Magpie, *Pica pica hudsonia* (Sabine). One Ohio record, Lucas Co. 5/9/37 (Campbell 1937b) (OSM), probably an escaped cage bird.
- *8. Troupial, *Icterus icterus* (Linnaeus). One Ohio record, Columbus 12/1/32 (Hicks 1933).
9. Eastern Painted Bunting, *Passerina ciris ciris* (Linnaeus). One Ohio record, a bird seen at Sandusky (Dawson 1903).

The above is admittedly a very incomplete list of exotic species that have been seen in Ohio. Many observers have reported escaped cage birds, such as canaries, parrots, penguins, and even an ostrich.

V. Hybrids and Others

The following hybrids have been reported from Ohio:

1. Snow Goose x Blue Goose.
2. Mallard x Black Duck.
3. Mallard x Pintail.
- *4. Brewster's Warbler, *Vermivora leucobronchialis* (Brewster). A hybrid of the blue-winged and golden-winged warblers.
- *5. Lawrence's Warbler, *Vermivora lawrencei* (Herrick). A rare hybrid of the blue-winged and golden-winged warblers.
- *6. Cincinnati Warbler, *Vermivora cincinnatiensis* (Langdon). A hybrid of the blue-winged and Kentucky warblers. One Ohio record, Hamilton Co. 5/1/80 (Langdon 1880).

Skeletal remains of the following species have been excavated from Indian mounds in Ohio:

1. Mississippi Kite, *Ictinia mississippiensis* (Wilson). Remains found in Jackson Co. (Wetmore 1932).
2. Little Brown Crane, *Grus canadensis canadensis* (Linnaeus). Remains found in Scioto Co. (Wetmore 1943b).
3. Ivory-billed Woodpecker, *Campephilus principalis* (Linnaeus). Remains found in Scioto Co. (Wetmore 1943a).

In the last 80 years at least two dozen species of birds have been introduced into Ohio but failed to become established. Between 1872 and 1874 the Acclima-

tion Society of Cincinnati spent about nine thousand dollars to introduce some twenty species of European birds (mostly passerines) in the vicinity of Cincinnati (Jour. Cinc. Soc. Nat. Hist., 4: 342-343; 1881). In more recent years the state conservation department has attempted to introduce a few species of gallinaceous birds (Chapman, 1935, pp. 656-663). Since these species died out soon after their introduction, it seems unnecessary to list them here.

MIGRATION DATES FOR THE BIRDS OF CENTRAL OHIO

The data presented in the following table are based on the migration records of the Wheaton Club (from 1922 through 1949) and on the records in the literature. The area "central Ohio" includes roughly the territory within about forty miles of Columbus. This tabulation is a revision of a similar tabulation by the writer in 1941 (Borror, 1941).

In the column indicating the *residential status* of each species ("RES"), the following symbols are used:

- PR—a nonmigratory permanent resident, occurring in central Ohio throughout the year.
- PRM—a migratory species, some individuals of which are to be found in central Ohio throughout the year; such species are more common during the spring and fall migrations.
- M—a migrant or transient, occurring in central Ohio during the spring and fall migrations; migrants that are starred (M*) are known to breed elsewhere in Ohio.
- SR—a summer resident, breeding in central Ohio; such species are more common during the spring and fall migrations.
- SV—a summer visitor, not breeding in central Ohio but occasionally occurring here in the summer; species that are starred (SV*) are known to breed elsewhere in Ohio.
- WR—a winter resident or visitor; such species are more common during the spring and fall migrations; winter residents that are starred (WR*) are known to breed in northern Ohio.

In the column indicating the *numerical status* of each species ("NUM"), the following symbols are used:

- VC—very common or abundant, to be seen regularly and in some numbers.
- C—common, to be seen regularly though not always in large numbers.
- FC—fairly common, to be seen fairly regularly, in varying numbers.
- U—uncommon, to be seen not more than a few times each season, and not at all in some seasons. These species were recorded in at least sixteen of the twenty-seven seasons on which the table is based.
- R—rare, to be seen only some seasons; these species were recorded in from ten to fifteen of the twenty-seven seasons on which the table is based.
- VR—very rare, to be seen only in occasional seasons; these species were recorded in from four to nine of the twenty-seven seasons on which the table is based.
- A—accidental or casual, species for which there are only a few records, or which were recorded in not more than three of the twenty-seven seasons on which the table is based.

When a species is more common at one residential status than at another, this condition is indicated by two or more lines of symbols in the two "STATUS" columns. For example, the common loon is a fairly common migrant, a very rare winter resident, and an accidental summer visitor; the horned grebe is a fairly common migrant and a rare winter resident. When a migrant species is more common at one season of migration than at another, this condition is indicated by two lines of symbols in the "NUM" column (with M in the "RES" column). For example, the lesser snow goose is accidental in the spring and rare in the fall. When there is a variation in the status of a species in different parts of the central Ohio area, this condition is indicated in a footnote.

When there are two lines of dates given for a species, those in the upper line are spring dates and those in the lower line are fall dates. In the case of accidental species, and very rare species that have been recorded in only four or five seasons, the average dates are omitted.

The earliest date of arrival in the spring and the latest date of departure in

the fall are omitted in cases where the species is less common in winter than in spring or fall; when the species is accidental in winter, the extreme spring and fall dates are given in parentheses and represent the extremes for the seasons in which the species did not occur in central Ohio in the winter. Similarly, the latest date of departure in the spring and the earliest date of arrival in the fall are omitted in cases where the species is less common in summer than in spring or fall; these extremes are given in parentheses when the species is accidental in summer. All extreme dates are from the Wheaton Club records unless otherwise indicated.

For the most part, only species are listed in the following table. In cases where two or more subspecies of a given species occur in central Ohio and they are not listed separately in the table, the status of the different subspecies in this area is given in a footnote.

TABLE OF MIGRATION DATES FOR THE BIRDS OF CENTRAL OHIO

SPECIES	STATUS		ARRIVAL		DEPARTURE	
	Res.	Num.	Earliest	Average	Average	Latest
Common Loon	M	FC	.....	3-30	5-12	(6-11-31)
	WR	VR	(9-19-26)	10-19	11-25	.....
	SV	A				
Red-throated Loon	M	A	10-17-25	.....	.....	12-12-23 ¹
Holboell's Grebe	M		1-21-45 ²	.....	.....	5-20-26
	WR	VR	10-25-25 ³	.....	.....	11-27-25
Horned Grebe	M	FC	.....	3-21	4-27	5-12-23
	WR	R	9- 7-24	10-13	11-22	.....
Pied-billed Grebe	M	C	.....	3-15	5- 7	.....
	WR	R	.....	10- 5	12- 1	.....
	SR	R	.....			
White Pelican	M	A	4-23-44	.....	.....	5-15-02 ³
			9-15-92 ⁴	.....	.....	10-25-74 ¹
Double-crested Cormorant	M	U	4- 1-78 ⁵	4-12	5-12	6-13-31
			8-25-30	9-28	10-31	12-15-27
Great Blue Heron	SR	C	.....			
	WR	VR	.....	3-14	11-25	.....
American Egret	M*	A	4-28-39	.....	.....¹	5-29-49
		U	6-19-32 ³	7-29	9-17	10-25-38 ⁶
Snowy Egret	SV	A	8-19-33	.....	.....	8-27-30 ³
Little Blue Heron	M	A	5- 3-42	.....	.....	5- 5-40
		VR	7- 8-48	7-24	9- 8	9-23-30 ⁷
Green Heron	SR	C	3-30-23 ⁸	4-16	10- 7	11-16-26 ⁹

NOTE—See page 29 for explanation of reference figures.

TABLE OF MIGRATION DATES FOR THE BIRDS OF CENTRAL OHIO—(Continued)

SPECIES	STATUS		ARRIVAL		DEPARTURE	
	Res.	Num.	Earliest	Average	Average	Latest
Black-crowned Night Heron	SR	FC				
	WR	VR	.....	4- 3	10-10	.....
Yellow-crowned Night Heron	M*	A	5- 4-46	.....	.....	5-22-46
American Bittern	M	FC				
	SR	VR	.....	4-10	5-20	.....
	WR	VR	.....	9- 2	10-24	.....
Least Bittern	SR	FC	5- 1-30	5- 9	9-12	9-29-28
Mute Swan	PR	U ⁹	.....	.....	.....	.....
Whistling Swan	M	VR	1-23-43	.....	.....	4-24-38
			10-20-30	.....	.....	11-24-28
Canada Goose ¹⁰	M	FC				
	WR	U	.....	3- 7	4-21	.....
	SR ¹¹	VR	.....	10-21	11-22	.....
American Brant	M	A	5-30-02 ⁵	.....	.....	5-30-02 ⁵
			11- 6-49	.....	.....	11-10-49
White-fronted Goose	M	A ¹²	.....	.....	.....	.....
Lesser Snow Goose	M	A	1-21-25	.....	.....	3-19-74 ¹³
		R	10-18-23 ³	10-27	11-18	12-28-29 ³
Blue Goose	M	R	(3-4-49)	3-18	4-10	4-18-27
	WR	A	10-17-48	10-25	11- 7	(11-20-49)
Mallard	PRM	VC	.....	.....	.....	.....
Black Duck	PRM	VC	.....	.....	.....	.....
Gadwall	M	U	.....	3- 7	4-24	5-19-25
	WR	R	9-10-30	10-27	11-22	.....
Pintail	M*	C	.....	2-20	4-23	5-22-49
	WR	R	9- 9-30 ³	9-30	11-29	.....
European Teal	M	A	3- 6-32 ³	.....	.....	3- 6-32 ³
Green-winged Teal	M*	FC	.....	3- 1	4-14	4-29-23 ³
	WR	R	8-26-22	10- 6	11-28	.....
Blue-winged Teal	M	C	.....			
	SR	R	.....	3-21	5-18	.....
	WR	VR	.....	9- 6	11- 6	.....

TABLE OF MIGRATION DATES FOR THE BIRDS OF CENTRAL OHIO—(Continued)

SPECIES	STATUS		ARRIVAL		DEPARTURE	
	Res.	Num.	Earliest	Average	Average	Latest
Cinnamon Teal	M	A	4- 4-95 ⁴	.....	.....	4- 4-95 ⁴
European Widgeon ¹⁴	M	R	(2-23-41)	3-20	4- 9	4-16-26 ⁵
	WR	A				
Baldpate	M*	C	.....	3- 1	5- 3	5-30-49
	WR	R	9- 6-30 ³	10- 3	11-21	.....
Shoveller	M*	U	.....	3-18	4-28	5-25-27
	WR	VR	9- 4-79 ³	10-13	11-19	.....
Wood Duck	SR	FC	(2-28-32) ³	3-20	10-20	(11-18-29)
	WR	A				
Redhead	M	FC	.....	2-28	4-18	6-17-41
	WR	R	9-27-42	10-23	11-29	.....
Ring-necked Duck	M	C	.....	2-26	5- 7	6- 3-28
	WR	R	10- 9-31	10-25	11-24	.....
Canvasback	M	FC	.....	2-25	4- 9	4-28-31
	WR	R	10- 4-48	10-29	12- 3	.....
Greater Scaup Duck	M	A	2- 4-33 ³	.....	.....	4-23-76 ¹³
			10-30-26	.....	.....	12- 1-27
Lesser Scaup Duck	M	VC	.....	3- 4	5-18	(6-10-49)
	SR	A	(9-24-29) ³	10-22	12- 6	.....
	WR	R				
American Golden-eye	WR	FC	11- 9-41	11-24	4-13	5-21-38
Buffle-head	M	U	.....	3-10	4-21	5-18-29 ³
	WR	R	10-25-49	11- 6	12- 2	.....
Old-squaw	M	R	.....	3-18	4-19	5-18-41
	WR	VR	11-22-28	.....	.....	.....
American Eider ¹⁸	M	A	11-11-95 ⁴	.....	.....	11-11-95 ⁴
King Eider	M	A	11- 4-80 ¹³	.....	.....	12- 2-26 ¹
		VR	2-28-25	.....	.....	4-28-40 ¹⁵
White-winged Scoter	M	R	10-17-30	10-26	11-10	12-22-24 ³
		A	3-26-31	.....	.....	4-28-17 ³
Surf Scoter	M	VR	10-24-25	.....	.....	11-13-28
		A	2-26-33 ¹⁶	.....	.....	4-23-29
American Scoter	M	VR	10-22-27	.....	.....	11-28-24 ⁸
						

TABLE OF MIGRATION DATES FOR THE BIRDS OF CENTRAL OHIO—(Continued)

SPECIES	STATUS		ARRIVAL		DEPARTURE	
	Res.	Num.	Earliest	Average	Average	Latest
Ruddy Duck	M	FC	.....	3-19	4-29	5-26-25
	WR	R	9-16-28	10- 9	12- 3	.....
Hooded Merganser	M	FC	.....	2-27	4-22	(5-25-26)
	SR	A	(10- 5-24)	10-24	12- 4	.....
	WR	R				
American Merganser	WR	C	11- 1-41	11-21	4-10	4-30-33 ^a
Red-breasted Merganser	M	FC	.....	3-20	5-11	(6-16-28)
	SR	A	(10-26-29)	11- 4	12- 2	.....
	WR	VR				
Turkey Vulture	SR	C	.....	2-26	11-19	.....
	WR	R				
Black Vulture ¹⁷	SR	FC	.....	3- 5	10-30	.....
	WR	R				
Goshawk ¹⁸	WR	A	11-29-24	.....	.....	3-31-23
Sharp-shinned Hawk	M	U	.....	2-26	4-23	.....
	SR	R	.....	8-30	10- 1	.....
	WR	R				
Cooper's Hawk	PRM	FC	.....	.....	.....	.....
Red-tailed Hawk	PRM	FC	.....	.....	.....	.....
Red-shouldered Hawk	PRM	U	.....	.....	.....	.....
Broad-winged Hawk	M*	U	3-20-27	4-16	5-10	5-29-31
	SR	R	8-12-40	8-31	10-11	10-28-26
Rough-legged Hawk	WR	R	10-21-23	11-13	3-20	5- 3-42
Harris's Hawk	M	A	12-24-17 ¹⁹	.....	.....	12-24-17 ¹⁹
Golden Eagle	WR	A	12- 8-28	.....	.....	3-27-26
Bald Eagle	M*	U	.....	2-23	4-11	5-18-42
	WR	R	7-18-42	9- 7	11-17	.....
Marsh Hawk	PRM	U	.....	.....	.....	.....
Osprey	M	U	(3-28-25)	4- 7	5-10	(5-27-42)
	SV	A	(8-10-41)	9-13	10-19	(12- 4-48)
	WR	A				
Duck Hawk	M	R	.....	2-12	4- 4	5-16-26 ^a
	WR	VR	8-14-26	9-18	10-22	.....

TABLE OF MIGRATION DATES FOR THE BIRDS OF CENTRAL OHIO—(Continued)

SPECIES	STATUS		ARRIVAL		DEPARTURE	
	Res.	Num.	Earliest	Average	Average	Latest
Pigeon Hawk	M*	R	.....	2-25	4-30	5-20-33
	WR	VR	9- 5-29	9-20	11-24	.....
Sparrow Hawk	PR	C	.....	.....	.....	.....
Ruffed Grouse ¹⁷	PR	U	.....	.....	.....	.....
Hungarian Partridge	PR	VR	.....	.....	.....	.....
Bob-white	PR	C	.....	.....	.....	.....
Ring-necked Pheasant	PR	C	.....	.....	.....	.....
Sandhill Crane	M*	A	10- 9-26	.....	.....	10-24-48
King Rail	SR	FC	4- 7-29	4-29	9-19	10-12-26
Virginia Rail	SR	FC	(3-27-27)	4-18	10-16	(11- 3-28)
	WR	A				
Sora	SR	FC	3-25-28 ³	4-14	10-17	11-17-30
Yellow Rail	SR	VR	4- 9-27 ⁸	.....	.....	9-29-28
Black Rail	SR	A	4- 1-27	.....	.....	6-10-23 ³
Purple Gallinule	M	A	5-17-28	.....	.....	5-17-28
Florida Gallinule	SR	U	4- 1-27	4-25	10- 5	11-16-24
American Coot	M	VC	.....	3-13	5-19	.....
	SR	R				
	WR	R		9-24	11-28	.....
Piping Plover	M*	VR	8-17-30 ²⁰	.....	.....	9-20-29
Semipalmated Plover	M	U	4-22-28	5- 8	5-24	5-29-31
			7-20-42	8-12	10- 3	10-30-24
Killdeer	SR	C	.....	2-19	11-23	.....
	WR	R				
Golden Plover	M	R ²¹	3-24-29	4- 7	4-27	5-25-40 ¹⁶
		U	8-15-23	9-14	10-16	12- 1-49
Black-bellied Plover	M	VR	5-12-76 ¹³	5-19	5-21	5-26-25 ⁸
		R	8-19-32	9-10	10-17	11-14-30
Ruddy Turnstone	M	VR	5- 6-12 ³	.....	.....	5-29-29 ³
			9-14-25 ³	.....	.....	10-27-40 ²²
American Woodcock	SR	FC	.....	3-17	10-28	.....
	WR	VR				
Wilson's Snipe	M*	C	.....	3-22	5-13	6- 7-48
	WR	VR	7-21-28	8-29	11-17	.....

TABLE OF MIGRATION DATES FOR THE BIRDS OF CENTRAL OHIO—(Continued)

SPECIES	STATUS		ARRIVAL		DEPARTURE	
	Res.	Num.	Earliest	Average	Average	Latest
Long-billed Curlew ¹⁸	M	A	5-22-26	.....	.....	5-31-02 ³
Hudsonian Curlew	M	VR	5-21-33	.....	.....	6-11-38 ²³
Upland Plover	SR	FC	3- 4-42	4- 2	9-15	10-11-32
Spotted Sandpiper	SR	C	3-30-49	4-17	10-10	11- 7-23
Solitary Sandpiper	M	FC	4- 1-48	4-19	5-22	(6-19-30)
	SV	A	(7- 3-25)	7-19	10- 1	11- 5-30
Willet	M	A	5-12-46	.....	.....	5-12-46
			7-26-42 ²⁴	.....	.....	9-18-24
Greater Yellowlegs	M	U	2-21-25	3-30	5-12	5-23-31
			7-12-24	8- 4	10-27	12-11-25
Lesser Yellowlegs	M	FC	3-20-28	4- 4	5-23	6- 9-29
			7- 8-48	7-30	10-16	11-29-23
American Knot	M	A	5-27-78 ¹	.....	.....	5-27-78 ¹
Pectoral Sandpiper	M	FC	3-18-30 ³	4- 1	5- 6	5-25-27
			7-15-42	8- 2	10-31	12- 1-49
White-rumped Sandpiper	M	VR	5-12-26	5-16	5-27	6- 4-23 ³
			7-12-24 ³	8-22	9-15	10-28-22
Baird's Sandpiper	M	VR	5-18-29	.....	.....	5-23-25 ³
		R	8- 7-27	8-24	9-24	11- 9-77 ¹³
Least Sandpiper	M	FC	4-24-49	5- 5	5-26	6-13-42
			7-11-25	7-30	10- 2	10-28-27
Red-backed Sandpiper	M	R	5-10-41	5-18	5-24	5-29-31
		U	9-24-29 ³	10- 2	11- 3	12-28-49
Eastern Dowitcher	M	VR	5- 2-25	.....	.....	5-24-26
		R	8-12-26	8-21	9-30	10-23-26 ³
Stilt Sandpiper	M	A	4-20-26	.....	.....	4-28-28 ³⁵
		R	7-17-28 ³	8-10	9-21	10-14-48
Semipalmated Sandpiper	M	FC	4-22-28	5- 9	5-28	6-10-28
			7- 8-48	7-28	10- 5	10-31-29
Western Sandpiper	M	R	7-19-30	8- 2	9-16	10-11-48
Buff-breasted Sandpiper	M	A	5- 6-23	.....	.....	5- 6-23
		VR	8-19-33	.....	.....	9-29-28

TABLE OF MIGRATION DATES FOR THE BIRDS OF CENTRAL OHIO—(Continued)

SPECIES	STATUS		ARRIVAL		DEPARTURE	
	Res.	Num.	Earliest	Average	Average	Latest
Marbled Godwit	M	A	4-21-79 ¹³	.....	.....	4-25-48
			9-13-25 ²⁶	.....	.....	10- 8-81 ¹
Hudsonian Godwit	M	A	5-22-26	.....	.....	5-30-25
			8-30-27	.....	.....	11- 7-25
Ruff	M	A	4-28-78 ¹	.....	.....	4-28-78 ¹
			11-10-72 ¹	.....	.....	11-10-72 ¹
Sanderling	M	A	5-10-24	.....	.....	5-22-26
		R	8-19-32	9- 2	9-30	11- 7-25
Red Phalarope	M	A	9-29-27	.....	.....	11- 2-29
Wilson's Phalarope	M	A	5-10-34 ³	.....	.....	6- 9-74 ¹
			9-17-38 ²³	.....	.....	9-17-38 ²³
Northern Phalarope	M	A	5-17-41	.....	.....	6-11-38
		VR	8-28-33	.....	.....	10-13-49
Parasitic Jaeger	M	A	9- 2-19 ³	.....	.....	10-16-26 ³
Long-tailed Jaeger	M	A	9- 5-28 ¹	.....	.....	9- 5-28 ¹
Iceland Gull	WR	A	12-26-37 ³	.....	.....	4-12-41 ²²
Great Black-backed Gull	WR	A	11-19-33	.....	.....	11-19-33
Herring Gull	M*	C	.....	2-20	5-14	6-30-48
	WR	U	9- 4-42	10-18	11-28	.....
Ring-billed Gull	M	FC	.....	3- 3	5-10	5-27-37
	WR	U	9- 2-30	10-11	11-28	.....
Franklin's Gull	M	A	10-10-37	.....	.....	10-15-06 ²⁷
Bonaparte's Gull	M	U	.....	4- 2	5- 6	.....
	SV	R	.....	9- 2	11-14	.....
	WR	VR	.....	.....	.....	.....
Little Gull	M	A	3-22-49	.....	.....	3-22-49
Atlantic Kittiwake	M	A	11- 7-25	.....	.....	11- 7-25
Sabine's Gull	M	A	10- 9-26	.....	.....	10- 9-26
Forster's Tern	M	A	4-19-25	.....	.....	4-19-25
		VR	8-17-32 ¹	.....	.....	11- 2-27
Common Tern	M*	FC	4- 3-28	4-29	5-26	.....
	SV	R	.....	8-24	10-11	11- 8-24

TABLE OF MIGRATION DATES FOR THE BIRDS OF CENTRAL OHIO—(Continued)

SPECIES	STATUS		ARRIVAL		DEPARTURE	
	Res.	Num.	Earliest	Average	Average	Latest
Least Tern	M	A	5-28-24	.....	.....	5-28-24
Caspian Tern	M	R	4-11-43	4-29	5-17	.....
	SV	VR	.....	8-29	9-23	10-18-23 ³
Black Tern	M*	FC	4-20-29	5- 3	5-21	.....
	SV	R	.....	8-18	9-16	9-26-48
Domestic Pigeon	PR	VC	.....	.....	.....	.....
Mourning Dove	PRM	VC	.....	.....	.....	.....
Yellow-billed Cuckoo	SR	FC	4-29-23	5- 6	10- 2	11-11-31
Black-billed Cuckoo	SR	U	5- 1-40	5- 8	9-30	10-15-25
Barn Owl	PR	FC	.....	.....	.....	.....
Screech Owl	PR	U	.....	.....	.....	.....
Great Horned Owl	PR	VR	.....	.....	.....	.....
Snowy Owl	WR	VR	11-20-10 ²⁸	.....	.....	1-18-27 ²⁹
Barred Owl	PR	FC	.....	.....	.....	.....
Long-eared Owl	M*	R	.....	2-22	3-31	4-15-44
	WR	VR	9- 5-22	.....	.....	.....
Short-eared Owl	M	R	.....	2-23	5- 4	.....
	SR	VR	.....	10- 6	11-14	.....
	WR	R	.....	.....	.....	.....
Saw-whet Owl	PR	VR	.....	.....	.....	.....
Whip-poor-will	SR	FC	4- 6-29	4-23	9-23	10- 6-27
Nighthawk	SR	C	4- 6-23	4-29	10- 1	10-19-24
Chimney Swift	SR	VC	4- 6-47	4-15	10- 8	11- 2-49
Ruby-throated Hummingbird	SR	FC	4-19-23	5- 3	9-22	10- 7-31
Belted Kingfisher	PRM	C	.....	.....	.....	.....
Northern Flicker	PRM	VC	.....	.....	.....	.....
Pileated Woodpecker	PR	U	.....	.....	.....	.....
Red-bellied Woodpecker	PR	U	.....	.....	.....	.....
Red-headed Woodpecker	SR	FC	.....	4-21	9-27	.....
	WR	R	.....	.....	.....	.....
Yellow-bellied Sapsucker	M*	C	.....	3-25	5- 6	5-18-28
	WR	VR	9-13-25 ³	9-23	10-24	.....

TABLE OF MIGRATION DATES FOR THE BIRDS OF CENTRAL OHIO—(Continued)

SPECIES	STATUS		ARRIVAL		DEPARTURE	
	Res.	Num.	Earliest	Average	Average	Latest
Hairy Woodpecker	PR	FC	.....	.....	.....	.....
Northern Downy Woodpecker	PR	C	.....	.....	.....	.....
Red-cockaded Woodpecker	M	A	3-15-72 ¹	.....	.....	3-15-72 ¹
Eastern Kingbird	SR	C	4-23-22	4-30	9-18	9-26-30
Arkansas Kingbird	M*	A	8-25-49	.....	.....	9- 9-48
Scissor-tailed Flycatcher	SV	A	7- 1-34	.....	.....	7- 1-34
Crested Flycatcher	SR	C	4-21-22	4-28	9-25	11-16-31 ¹
Phoebe	SR	C	(2-23-30)	3-16	10-21	(11-20-49)
	WR	A				
Yellow-bellied Flycatcher	M	U	5- 2-26	5-11	5-23	6- 4-49
			8-11-31 ³	8-27	9-24	10- 6-29 ³
Acadian Flycatcher	SR	C	4-29-30	5- 6	9-19	10- 7-28
Alder Flycatcher	SR	FC	4-24-48	5- 7	9- 7	10-23-49
Least Flycatcher	M*	C	4-22-48	5- 1	5-23	6- 1-27
			8-12-40	8-31	9-26	10- 7-28
Wood Pewee	SR	C	4-23-29	5- 5	9-26	10-19-25
Olive-sided Flycatcher	M*	U	5- 3-28	5-14	5-27	6- 9-28 ³
		R	8-10-24	8-30	9-22	9-28-25
Hoyt's Horned Lark	WR	A	11-26-80 ³⁰	.....	.....	3-17-28 ³
Northern Horned Lark	WR	U	10-11-28	11- 9	3- 6	4- 7-29
Prairie Horned Lark	PRM	C	.....	.....	.....	.....
Tree Swallow	SR	FC	3-18-44	4- 3	10- 5	11- 3-25
Bank Swallow	M	FC	4-11-26	4-19	5-25	.....
	SR	R	.....	7-22	9- 9	10-11-22
Rough-winged Swallow	SR	C	4- 5-46	4-12	8-31	10-15-22
Barn Swallow	SR	VC	4- 2-32	4- 9	10- 6	10-29-31
Cliff Swallow	M	U	4-15-33	5- 2	5-19	.....
	SR	R	.....	8-19	8-30	10-10-25
Purple Martin	SR	VC	3-15-30	3-29	9-21	10-27-28 ³
Blue Jay	PRM	VC	.....	.....	.....	.....
Crow	PRM	VC	.....	.....	.....	.....
Appalachian Black-capped Chickadee	WR*	A	12- 6-81 ³⁰	.....	.....	12- 6-81 ³⁰

TABLE OF MIGRATION DATES FOR THE BIRDS OF CENTRAL OHIO—(Continued)

SPECIES	STATUS		ARRIVAL		DEPARTURE	
	Res.	Num.	Earliest	Average	Average	Latest
Carolina Chickadee	PR	FC	.....	.....	.....	.....
Tufted Titmouse	PR	C	.....	.....	.....	.....
White-breasted Nuthatch	PR	FC	.....	.....	.....	.....
Red-breasted Nuthatch	M*	U	.....	5- 6	5-13	5-26-26
	WR	R	9- 5-28	9-19	11- 7	.....
Brown Creeper	WR*	FC	9-13-22 ^s	10- 1	5- 4	5-17-33
House Wren	SR	VC	(3-27-26) ^s	4-14	10- 8	(10-27-28)
	WR	A				
Winter Wren	WR	U	9- 8-31	9-27	5- 3	5-18-43
Bewick's Wren	SR	U	.....	4- 2	9-28	.....
	WR	VR				
Carolina Wren	PR	FC	.....	.....	.....	.....
Prairie Marsh Wren	SR	FC	.....	4-26	10-25	.....
	WR	R				
Short-billed Marsh Wren	M	R	(4-29-31)	5- 7	5-19	.....
	SR	VR				
	WR	A				
Mockingbird	PR	U	.....	.....	.....	.....
Catbird	SR	VC	(4-13-31)	4-22	10-22	(11-17-28) ^s
	WR	A				
Brown Thrasher	SR	C	(3-21-26)	4- 3	10-12	(11- 2-29) ^s
	WR	A				
Robin	SR	VC	.....	2-18	11-21	.....
	WR	U				
Wood Thrush	SR	C	(3-26-39)	4-20	9-26	(10-14-29)
	WR	A				
Hermit Thrush	M*	C	.....	3-29	5- 9	5-18-31
	WR	R	9- 9-32	9-28	11- 3	.....
Olive-backed Thrush	M	C	4- 6-23	4-24	5-28	6- 8-28
			8-23-29	9- 5	10-13	11- 3-28
Gray-cheeked Thrush	M	FC	4-20-29	5- 3	5-24	6- 2-28
			9- 1-25	9-14	10- 4	10-28-28 ^s

TABLE OF MIGRATION DATES FOR THE BIRDS OF CENTRAL OHIO—(Continued)

SPECIES	STATUS		ARRIVAL		DEPARTURE	
	Res.	Num.	Earliest	Average	Average	Latest
Veery	M*	U	4-15-29	5- 2	5-22	5-31-28
			8-17-25	8-31	9-30	10-18-31
Bluebird	SR	C				
	WR	U	.....	2-23	11-15	.....
Blue-gray Gnatcatcher	SR	FC	3-31-24	4-13	9-11	10- 3-29
Golden-crowned Kinglet	WR	C	9-25-28	10- 1	5- 1	5-18-32
Ruby-crowned Kinglet	M	C	.....	4- 2	5-17	5-31-25
	WR	R	8-22-31	9-21	10-28	.....
American Pipit	M	U	.....	3-21	5- 7	5-27-48
	WR	VR	9- 5-25	9-24	11- 7	.....
Cedar Waxwing	PRM	FC	.....	.....	.....	.....
Northern Shrike ¹⁸	WR	A	11- 8-24	.....	.....	4- 5-31
Migrant Shrike	SR	U				
	WR	R	.....	3-16	9-16	.....
Starling	PRM	VC	.....	.....	.....	.....
White-eyed Vireo	SR	FC	4- 9-22	4-25	9-21	10- 6-28
Yellow-throated Vireo	SR	FC	4-14-41	4-28	9-19	10- 2-31
Blue-headed Vireo	M*	FC	4-19-25	4-26	5-17	5-27-28
			9-12-27	9-22	10-13	10-21-44
Red-eyed Vireo	SR	VC	4-22-23	4-30	10- 2	10-14-24
Philadelphia Vireo	M	U	5- 2-26	5- 8	5-23	6- 4-28
			8-30-31	9-13	10- 4	10-14-49
Warbling Vireo	SR	C	4-13-49	4-26	9-20	10- 7-28
Black and White Warbler	M	C	4- 5-47	4-21	5-18	.....
	SR	U	.....	8-11	9-29	10-13-48
Prothonotary Warbler	SR	U	4- 6-47	4-30	9-13	10- 5-24
Worm-eating Warbler ³¹	SR	FC	4-18-22	4-30	9- 4	9-17-29
Golden-winged Warbler	M*	U	5- 1-41	5- 7	5-14	5-19-25
		VR	8- 4-28 ³	.....	.....	9- 6-30
Blue-winged Warbler	SR	U	4-20-29	4-29	9-16	10-15-30
Brewster's Warbler	SR	VR	5- 6-28	.....	.....	9-15-29
Lawrence's Warbler	M	A	5-13-30	.....	.....	5-13-30

TABLE OF MIGRATION DATES FOR THE BIRDS OF CENTRAL OHIO—(Continued)

SPECIES	STATUS		ARRIVAL		DEPARTURE	
	Res.	Num.	Earliest	Average	Average	Latest
Tennessee Warbler	M	C	4-27-48	5- 6	5-25	6- 2-26
			8-24-31	8-30	10-11	10-31-25
Orange-crowned Warbler	M	U	(4-25-25)	5- 3	5-13	5-18-41
	WR	A	9-16-38 ²³	9-23	10-11	(10-20-26) ³
Nashville Warbler	M*	C	4-23-25	4-28	5-20	5-30-23
			8-16-29	9- 2	10- 8	10-23-27
Parula Warbler ²¹	M	FC	4-15-40 ¹⁵	5- 2	5-23	.....
	SR	U	.....	8-25	9-24	10- 9-27
Yellow Warbler	SR	VC	4-11-32	4-22	9-15	9-29-28
Magnolia Warbler	M*	C	4-15-48	5- 3	5-27	6- 6-30
			8-11-31	8-25	10- 8	10-19-41
Cape May Warbler	M	FC	(4-29-33) ³	5- 5	5-20	5-29-49
	WR	A	8-12-40	9- 1	10- 2	(10-16-27)
Black-throated Blue Warbler	M*	U	4-29-32	5- 6	5-20	5-28-24
			8-28-24	9- 6	10- 6	11-11-44 ¹
Myrtle Warbler	M	VC	.....	4-11	5-21	5-27-24
	WR	R	8-18-44	9-17	10-31	.....
Black-throated Green Warbler	M	C	4-14-41	4-22	5-24	.....
	SR	R	.....	8-31	10-12	10-31-25
Cerulean Warbler	SR	FC	4-22-23	4-30	9- 9	9-26-49
Blackburnian Warbler	M*	FC	4-20-27	5- 1	5-24	6- 1-24
			8-13-25	8-29	10- 5	10-14-28
Sycamore Warbler ²²	SR	VR	4- 7-77 ¹³	4-30	8-24	10- 8-81 ¹
Chestnut-sided Warbler	M*	C	4-27-48	5- 4	5-24	6- 4-28
			8-12-24	8-29	9-28	10- 7-23
Bay-breasted Warbler	M	C	4-26-25	5- 6	5-25	6- 3-28
			8-18-25	9- 1	10-14	10-30-48
Black-poll Warbler	M	U	4-16-75 ¹	5- 8	5-26	6- 6-24
		C	8-28-42	9- 8	10-16	11- 1-25
Pine Warbler	M	U	(3-20-24) ⁸	4-18	5- 5	.....
	SR	VR	.....	9-16	10- 7	(10-21-26)
	WR	A	.....	.....	.....	.....

TABLE OF MIGRATION DATES FOR THE BIRDS OF CENTRAL OHIO—(Continued)

SPECIES	STATUS		ARRIVAL		DEPARTURE	
	Res.	Num.	Earliest	Average	Average	Latest
Kirtland's Warbler	M	VR	5-13-27 9-11-25 ²⁰	5-18	5-25	5-29-49 9-11-25 ²⁰
Prairie Warbler ²¹	SR	FC	4-16-38 ²³	4-30	9- 5	10- 6-27
Palm Warbler	M	FC	(4-17-31)	4-24	5-16	5-22-46
	WR	A	8- 9-33 ³	9-10	10-16	(12-13-24) ⁸
Ovenbird	SR	C	4-16-22	4-26	10- 2	10-16-49
Water-Thrush ²³	M*	FC	4-15-77 ¹³ 8- 9-26	4-28 8-23	5-19 10- 2	5-29-25 10-16-30
Louisiana Water-Thrush	SR	FC	3- 7-46	4- 7	9-18	10-11-31
Kentucky Warbler ²¹	SR	FC	4-17-27	5- 4	9-13	9-29-28
Connecticut Warbler	M	FC	5- 3-44 8-27-31	5-12 9- 8	5-28 10- 2	6- 7-24 10-12-98 ¹
Mourning Warbler	M*	FC	5- 1-24 8-23-24	5-12 9- 5	5-28 9-30	6- 2-28 11- 1-25
Northern Yellowthroat	SR	C	(4-17-22)	4-25	10- 9	(11- 2-29)
	WR	A				
Yellow-breasted Chat	SR	C	4-25-31	5- 2	8-27	9-22-48
Hooded Warbler ²¹	SR	FC	4-19-25	5- 2	9-20	10-10-31
Wilson's Warbler	M	FC	5- 2-36 8-20-25	5-11 8-27	5-26 9-24	6- 2-28 ³ 9-30-42
Canada Warbler	M*	C	5- 2-37 8-12-37 ²⁴	5- 7 8-27	5-27 9-21	6- 7-42 ²⁴ 10- 2-42
American Redstart	M	C	4-25-31	5- 3	5-23	.....
	SR	R	.....	8-22	10- 6	10-27-27
English Sparrow	PR	VC	.....	.....	.....	.....
Bobolink	SR	FC	4-12-03 ⁵	4-27	9-29	10-27-28 ³
Eastern Meadowlark	SR	VC	.....	.....	.....	.....
	WR	R	.....	2-28	11-27	.....
Western Meadowlark	M*	A	5- 5-46	.....	.....	5-26-46
Yellow-headed Blackbird	M*	A ²⁵	2-26-25	.....	.....	3- 8-31
Eastern Redwing	SR	VC	.....	.....	.....	.....
	WR	R	.....	3- 3	11-22	.....

TABLE OF MIGRATION DATES FOR THE BIRDS OF CENTRAL OHIO—(Continued)

SPECIES	STATUS		ARRIVAL		DEPARTURE	
	Res.	Num.	Earliest	Average	Average	Latest
Giant Redwing	WR	A	10-28-27 ¹	.....	.....	1- 2-33 ¹
Orchard Oriole	SR	FC	4- 3-29	5- 3	8-19	8-28-25
Baltimore Oriole	SR	C	4- 4-29	4-29	9-16	10-11-28
Rusty Blackbird	M	FC	.....	3-11	4-28	5-31-41 ¹
	WR	R	9- 9-73 ¹³	10- 2	11-16	.....
Bronzed Grackle	SR	VC	.....	2-27	11-18	.....
	WR	R	.....	.....	.....	.....
Cowbird	SR	VC	.....	3- 5	11-20	.....
	WR	R	.....	.....	.....	.....
Scarlet Tanager	SR	FC	4-17-27	4-30	9-23	10-11-29
Summer Tanager	SR	FC	4-22-23	5- 3	9-22	10- 7-31
Cardinal	PR	VC	.....	.....	.....	.....
Rose-breasted Grosbeak	M*	FC	4-24-29	5- 3	5-20	6- 3-74 ¹³
			7-26-22	8-29	10- 2	10-21-44
Indigo Bunting	SR	VC	(4-24-25)	5- 1	10- 1	(10-16-80) ¹
	WR	A				
Dickcissel	SR	R	4-28-25	5- 7	8-28	9-27-30 ³
Evening Grosbeak	WR	A	12-10-89 ⁴	.....	.....	4-30-46
Purple Finch	M*	U	.....	4- 4	5-12	5-24-24
	WR	R	9-18-24	9-29	11- 5	.....
Common Redpoll	WR	A	12-22-35 ³	.....	.....	2-17-23
Pine Siskin	M	R	.....	4-30	5-18	5-29-24
	WR	VR	10-12-48	10-26	11-18	.....
Goldfinch	SR	VC	.....	4-11	11-15	.....
	WR	FC	.....	.....	.....	.....
Red Crossbill	WR	A	10-11-03 ⁵	.....	.....	6-18-78 ¹
White-winged Crossbill	WR	A	12- 4-25 ³⁶	.....	.....	2-28-26
Red-eyed Towhee	SR	C	.....	3- 5	10-29	.....
	WR	R	.....	.....	.....	.....
Arctic Towhee	M	A	3-29-46	.....	.....	3-29-46
Savannah Sparrow	M	U	(3-10-25)	3-26	5- 4	.....
	SR	VR		9-17	10-27	(11-13-42)
	WR	A	.....	.....	.....	.....

TABLE OF MIGRATION DATES FOR THE BIRDS OF CENTRAL OHIO—(Continued)

SPECIES	STATUS		ARRIVAL		DEPARTURE	
	Res.	Num.	Earliest	Average	Average	Latest
Grasshopper Sparrow	SR	C	(3-26-39)	4-17	9-15	(10-13-30)
	WR	A				
Leconte's Sparrow	M	A	10-31-36 ³⁷	.....	.....	11-23-36 ³⁷
Henslow's Sparrow	SR	FC	(4- 6-29)	4-21	9-15	(10-25-29)
	WR	A				
Nelson's Sparrow	M	A	4-18-25	.....	.....	5-27-28
			9-19-29	.....	.....	10- 8-27
Vesper Sparrow	SR	C	.....	3-25	10-27	.....
	WR	VR				
Lark Sparrow	SR	R	4-24-27	5-14	8-30	9-28-74 ¹³
Bachman's Sparrow	SR	U	4-10-25	4-24	8-27	9-17-31
Slate-colored Junco	WR*	VC	9-15-28	9-26	5- 5	5-30-25 ⁸
Intermediate Junco	WR	A	11-26-45 ¹	.....	.....	4- 4-46 ¹
Oregon Junco	WR	A	11-20-49	.....	.....	1- 2-46 ¹
Tree Sparrow	WR	VC	9-27-31	10-21	4-20	5- 7-33 ³
Chipping Sparrow	SR	C	(3-17-28)	3-30	10-20	(11-16-32)
	WR	A				
Field Sparrow	SR	VC	(2-27-49)	3-17	10-30	(12- 4-31)
	WR	A				
Harris's Sparrow	M	A	4- 1-23	.....	.....	5-14-25
			10-20-28	.....	.....	11-12-21 ²⁶
White-crowned Sparrow	M	FC	.....	4-29	5-19	5-29-49
	WR	VR	9-27-30	10- 6	10-28	.....
Gambel's Sparrow	M	A	5-13-43	.....	.....	5-13-43
			10-13-28 ¹	.....	.....	10-13-28 ¹
White-throated Sparrow	M*	VC	.....	4- 1	5-22 ¹¹	6-11-48
	WR	R	9-12-27	9-24 ¹	11-13	.....
Fox Sparrow	M	FC	.....	3-14	4-23	5-20-22
	WR	VR	9-21-44	10-12	11-14	.....
Lincoln's Sparrow	M	U	4-16-32	5- 5	5-19	5-28-24
			9- 4-31	9-25	10-23	11- 3-29 ³

TABLE OF MIGRATION DATES FOR THE BIRDS OF CENTRAL OHIO—(Continued)

SPECIES	STATUS		ARRIVAL		DEPARTURE	
	Res.	Num.	Earliest	Average	Average	Latest
Swamp Sparrow	M	FC	.....	4- 1	5-16	.....
	SR	R	.....	9-22	11- 3	.....
	WR	R				
Song Sparrow	PRM	VC	.....	.....	.....	.....
Lapland Longspur	WR	R	11- 3-26 ³	12- 7	2-20	4-12-30
Alaskan Longspur	WR	A	2-19-75 ³⁸	.....	.....	2-19-75 ³⁸
Snow Bunting	WR	R	10-30-26	11-23	2-21	3- 3-29

EXPLANATION OF REFERENCE FIGURES USED IN TABLES

¹Skin in the Ohio State Museum.²Mayfield 1945.³Trautman 1940.⁴Davie 1898.⁵Dawson 1903.⁶Walker 1939.⁷Hicks 1931.⁸Walker 1928a.⁹There have been two or three birds along the Scioto River, between Griggs Dam and Bellepoint, since 1944.¹⁰These dates refer to the Common Canada Goose; there is one central Ohio record of Hutchins's Goose (Trautman 1940).¹¹A few individuals, possibly from the Columbus Zoo, have nested in the Depp Pond (Twin Lakes) area in recent years.¹²A skin in the Ohio State Museum, no. X-W/1955, labelled "Fairfield Co., O.," without date.¹³Wheaton 1882.¹⁴Hasbrouck (1944b) discusses the status of this species in North America, and gives 3-21 to 5-4 as the normal Ohio dates.¹⁵Walker 1940.¹⁶Hicks 1934b.¹⁷Sugar Grove region; accidental elsewhere in central Ohio.¹⁸There is some doubt of the validity of these records.¹⁹Earl 1918.²⁰Hicks 1938a.²¹More common, especially in the spring, in the western part of the central Ohio area.²²Walker 1941b.²³Walker 1938.²⁴Walker 1942.²⁵Hicks 1929.²⁶Thomas 1926.²⁷Jones 1907.²⁸Bales 1911.²⁹Thomas 1928.³⁰Oberholser 1919.³¹Summer resident in the Sugar Grove region; a migrant farther north in central Ohio.³²More common in southern Ohio; accidental in Franklin Co.³³Both the Northern Water Thrush and Grinnell's Water-Thrush occur in central Ohio; the latter appears to be the more common subspecies.³⁴Walker 1937.³⁵Dawson (1903) reports a pair of this species seen near Groveport, in the summer of 1873, by Wheaton.³⁶Anonymous 1928.³⁷Hicks 1937b.³⁸Wetmore 1943c.³⁹Duvall 1945.

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THE GEOGRAPHICAL BASIS OF NATIONAL POWER

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INTRODUCTION

Unfortunately there exists today widespread misunderstanding or even ignorance, not only of basic geographic factors which in large measure direct every major step taken in world politics, but also of the influence that natural environment plays in the survival of nations. A broad knowledge of geography is essential in any attempt to gain an understanding, if only in part, of the numerous problems confronting people throughout the world (Fig. 1). These problems, though usually of an economic, political, or cultural nature, generally have a definite geographical



FIG. 1. Geographic study is basic in analyzing domestic and world problems.

foundation. From a thorough and critical geographic study one should be able to discover the basis as well as the essential characteristics of man's unceasing competitive struggle for existence and recognize that the means by which men and women of a given region secure their livelihood reflect adjustments to physical conditions.

In order to endure, a state must first of all provide complete protection against all enemies, both domestic and foreign, for each individual living within the bounds of its jurisdiction. Secondly, it must afford freedom of opportunity whereby each citizen can gain a worthy means of livelihood. In view of these two great responsibilities a nation should take every necessary precaution to assure its people of

security from all anxiety, fear, or danger. The inhabitants of the United States or of any other country cannot be free to enjoy an *abundant life*, which is rightfully theirs, if compelled to live under the economic, political, and cultural domination of another state. And yet there are always national entities which attempt by various devices to gain permanent supremacy over others, even though it usually results in much unwarranted suffering and cultural destruction.

A few far-seeing individuals dream of forging all nations into a voluntary democratic federation, the activities of which would be largely devoted to bettering the welfare of humanity with complete respect for the rights and privileges of each member of society. However, such an Utopian ideal still seems far beyond the grasp of mankind and thus a world of realities must be faced, a world filled with uncontrolled human emotions and passions. The people of the United States should become aware of their national insecurity and the dangers which confront them; they should be deeply impressed by the one great principle—as human beings each man, woman, and child is a vital, throbbing part of the world in which they live.

The American people cannot afford to remain unaware of the intimate relationships existing between geography and human activities, for the United States holds a unique place in world affairs due primarily to the favorableness of its geographic position and environment. This nation is the only major state with direct access to both the Atlantic and Pacific oceans which is capable of exerting tremendous political pressure because of its actual as well as potential power. World leadership is open to the American people; they must be ready and willing however to grasp this commanding position. Such an opportunity demands that each individual be well informed, particularly in social sciences, so as to gain a richer comprehensiveness of the guiding principles of modern society. The people of the United States will have to develop a *global concept* if they are to play a vital and successful role in world affairs; the earth must be viewed as a single integrated unit and a realistic approach taken to present problems.

Mental laziness and utter disregard for personal responsibilities has led the people of this country, time after time, into a sense of false security as only too well revealed by the late war. Such a situation cannot be continued if the nation is to avoid ultimate and complete destruction. There is a great need for careful analysis of the intricate pattern of American domestic and foreign policies as well as thorough understanding of the urgency for resource mobilization in the interest of national security. In order to safeguard its position as the arsenal of democratic principles, the United States must have actual as well as potential military strength, for power has no meaning unless backed by adequate armed support. Mere recognition of defense requirements is not itself ample to safeguard the future. The citizenry, through the degree of its interest and active participation in national security measures, will determine the safety of the country.

EXPANSION AND NATIONAL POWER

A desire to explore unknown parts of the globe, and the hope on the part of many to find fabulous wealth in undiscovered lands, has caused men to travel into all parts of the world. The quest for hidden wealth has been carried down through the ages and it may well be expected to continue as long as man inhabits the earth. Phoenician traders secured tin from the mines of Cornwall; merchants of Genoa and Venice collected silks and spices in the Orient; Spanish conquistadores drew vast treasures of gold and silver from the mines of Middle and South America; and French voyageurs gathered cargoes of priceless furs from the streams and woodlands of what is now Anglo-America. The search continues, and men go on struggling through fever- and mosquito-ridden swamps, across wind-swept arctic and saharan deserts, and over towering mountain ranges, always carrying in their hearts the burning desire to find resources that will bring power and wealth as well as ever-

lasting fame. The United States ranks foremost among the nations in this search, seeking new and greater mineral possibilities, additional agricultural products, and valuable medicinal materials.

It is largely the geographic conditions, such as space relations (location, size, and shape), land forms, climate, land content (soils and minerals), and native vegetation, which strengthen some states and weaken others. These several conditioning elements, coupled with population numbers and distribution (Fig. 2), have great influence on international problems and, consequently, do much in shaping the attitudes of people throughout the world toward peace and aggression. The direction a state expands is dependent upon both geographic and human factors, but as

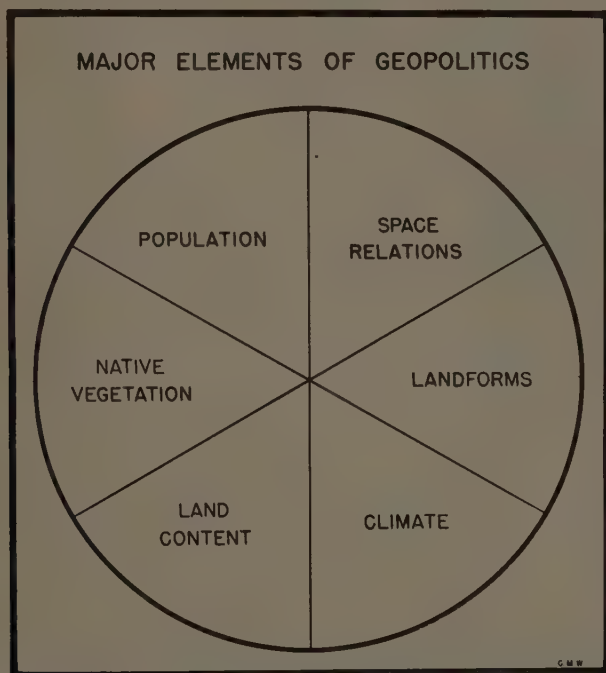


FIG. 2. The success or failure of a nation to become a world power is dependent primarily on the major elements of geopolitics.

a general rule the stronger states move into adjacent territory which may be either sparsely populated or poorly governed. In many instances expansion is more or less incidental but often becomes part of a national ideal and heavy pressure develops for *lebensraum* as expressed by Germany and Japan on numerous occasions. Formerly the right to expand was chiefly a matter of which state, having adequate power to maintain itself, took control first. If the area was so situated as to command broad areas of land or water, or control strategic lines of communication and transportation, it greatly increased the power potential of the occupying nation. The acquisition of suitable land, sea, and air bases often creates many international problems because in time of war such bases may assume strategic importance. However, expansion carries with it certain elements of weakness

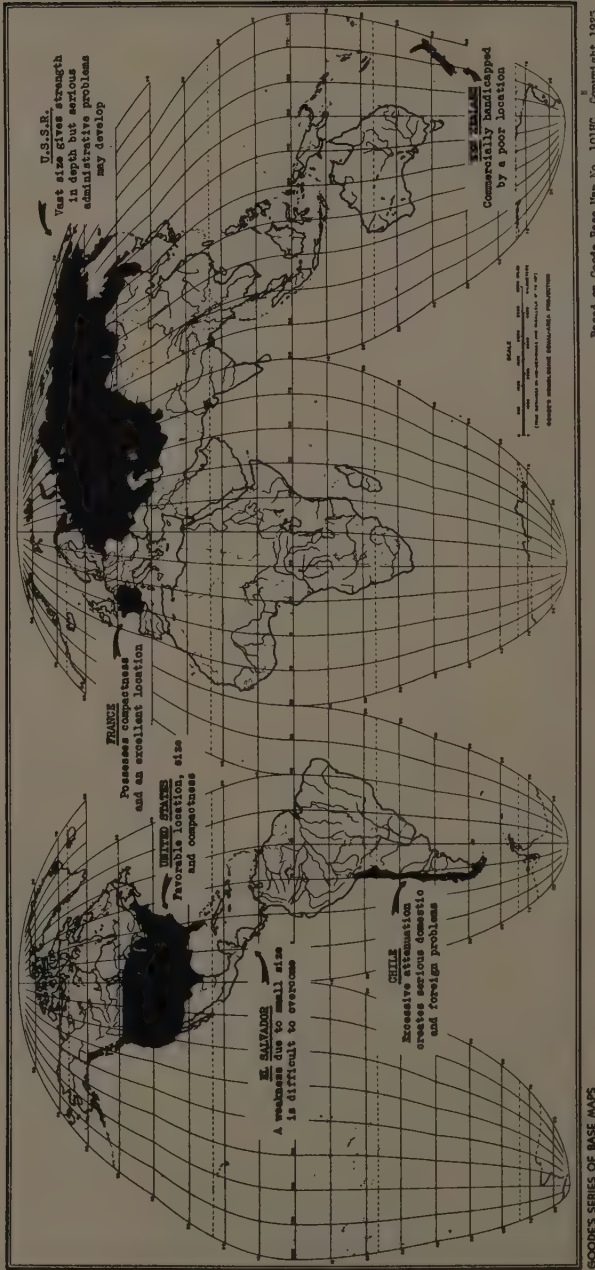


Fig. 3. Space relations largely determine the economical and political development of a state.

inasmuch as the borders of a state may become increasingly longer and often not readily defensible in a geographic sense; the Great Wall of China was intended to correct the weakness incurred by an overexpanded state.

A leading objective in colonization has been the hope of discovering minerals of definite economic value. Although the economic value of colonies or dependencies may be seriously questioned, it should be recognized that they do possess four definite geopolitical values, namely: (1) usually give political prestige to the holder; (2) represent in many instances a source of manpower, especially for military considerations; (3) may offer strategic bases during economic or military conflicts; and (4) possibly furnish a suitable outlet for immigration from the holding power. Island possessions such as the East Indies or Hawaiian group often become stepping stones to world power, at times serving as critical outposts.

SPACE RELATIONS

(Fig. 3)

Location—The position of places and resources on the earth's surface is of great importance to a state, for security as well as industrial development. It is of paramount consideration in analyzing a nation's actual and power potential since both are mainly dependent on the total distance of that country from other force centers. Many locations are considered *strategic* and in time of peace may seriously influence trade, while during conflict they may serve as important bases for military operations. Location plays a major role in the mobilization of a nation's resources and largely determines their degree of accessibility, a factor which no state can afford to ignore if expecting to survive in a world harassed by international conflict.

Size—Since areal extent affects both the development of a state and its role in international affairs, the importance of space cannot be dismissed lightly. Although a relatively large area is not in itself indicative of power, it may usually be regarded as a prerequisite and therefore the desire for more land often furnishes an incentive for a nation to engage in armed conflict. Size measurably determines the vulnerability of industrial establishments and transportation-communication nets even though they may be fairly well decentralized; the security of population centers is likewise affected. In many instances the land area of a country is such that it affords the people an opportunity to become large in numbers; in other situations it is much too inadequate for the needs of an expanding population as occurs in Haiti and Japan.

Protection afforded by great depth adds much to defensibility regardless of whether the attack is made by air, land or sea, or a combination of all three. In periods of international strife, a nation with good depth can carry through military operations on the perimeter while mobilization of manpower and protection of industry is made possible in the more central parts of the country. The state with a densely populated core surrounded chiefly by sparsely occupied territory, is in possession of a definite advantage over one not so constituted. It needs to be recognized, however, that depth may become a liability to the defender when that nation takes the offensive, especially if the *scorched earth* strategy is applied by either side in retreating.

Shape—The shape of a state also has direct bearing on its economic, political and cultural life as well as on the mechanics of warfare. Throughout the history of nations there has always been the desire on the part of some to round out their territory, even at the expense of a peaceful neighbor. Compactness makes for political unity and greatly facilitates transportation and communications, and the mobilization of industry, labor, and military forces in times of emergency. However, if compactness is not combined with large size, the vulnerability of the state is considerable, especially to modern aerial attack. In case of excessive elongation

(Chile offers an excellent example) the assailability of any one section of the country becomes a major problem. This elongation may also cause serious internal weakness due to a natural tendency for inhabitants to develop strong sectionalism.

Land Forms.—The greatly varied land forms of most states considerably influence international relations and the execution of military operations. The arrangement and distribution of mountains, plateaus, and valleys determine to an appreciable extent the condition of other natural factors which circumscribe in most instances man's activities. Location of transportation and communication lines, industrial and commercial centers, and the distribution of population result mainly from varying topographic features. The world's great cities and areas of dense



FIG. 4. A stream bordered by steep cliffs, while interfering with commerce, tends to restrict boundary conflicts.

rural population are found chiefly on low-lying productive plains or on the lower slopes and broad valleys in the somewhat rugged highlands. Terrain may serve as a pronounced barrier to the flow of goods and to movements of people, but in so doing it also restricts the possibilities of conflict (Fig. 4). In many instances international boundaries have been rearranged in order to take advantage of certain physiographic conditions as in the case of the French-Spanish border.

A majority of states possess both land and sea boundaries which, depending upon the country's topography, may represent an asset or a distinct liability.

Coastlines usually constitute an important item in national power, so much so that landlocked states tend to seek direct access to the world's sea lanes. If successful, such action necessitates the building of a navy in order that a country may not only defend its coastline exposure but consider itself a sea power. Insular states or those whose borders are peninsular or predominantly coastal can be expected to maintain a navy and air force as first lines of defense. Configuration of a coastline largely determines a maritime state's vulnerability to naval attack; if a modern nation possesses numerous good harbors, the naval forces will no doubt be prominent. On the other hand, if the coast affords few suitable indentations for harbor development, the air force may well be expected to occupy foremost position in the military establishment.

CLIMATE

Climate occupies a leading place in the economic, political and cultural relations between states since international problems often have their beginning in pronounced climatic differences. To a large extent climate determines the health



FIG. 5. Semiarid regions offer little encouragement to settlement unless the land is fertile and suitable amounts of water are available for irrigation.

and energy of mankind, having direct effect on the accuracy and speed with which people work. Regions either extremely hot, cold, wet, or arid, are generally sparsely populated and fail to attain a high degree of civilization (Fig. 5). The development of powerful states has usually taken place in the more humid parts of the earth possessing intermediate temperatures; these regions occur mainly in the middle latitudes. In time of conflict, climate has often proved an outstanding ally of the defender as well as the invader. Nearly all military operations are scheduled so that certain favorable weather conditions may be present, particularly for offensive strategy; at times an entire military campaign is decisively changed due to the unexpected advent of cold, fog or rain.

The productivity of a state depends chiefly on climate, a factor which in turn largely determines the availability of water resources, the nature of soils, and the type and quantity of vegetable and animal products raised. Some climates are characterized by only slight changes in temperature or precipitation from season to season while others experience marked variations during the year. Fluctuations in temperature, and the amount and distribution of precipitation, have much influence on the habitability of any given region. A state large in area, such as China, the Soviet Union, or the United States, can greatly benefit from the fact that it includes within its boundaries a wide variety of climates, each one contributing to the diversity as well as to the balance of its productive capacity. The success or failure of many economic and industrial enterprises is directly traceable to conditions of climate.

LAND CONTENT

In order to become a world power, a state must either have essential natural resources within its borders or else the power to guarantee access to foreign supplies at all times. The uneven distribution of the world's resources is largely responsible for a desire on the part of governments to own or control productive areas in various parts of the globe. Coal, petroleum, iron, copper, tin, cotton, rubber, wool, meat, sugar, tobacco, and wheat are critical commodities in a bid for national power. Of these, iron, copper, coal, petroleum, cotton, and rubber are basic raw materials for an industrial economy. A state lacking sufficient quantity and variety of food, minerals, and other raw materials for satisfactory economic development, is dependent on foreign sources to supply its deficiencies. In view of this situation many nations continually strive to devise means whereby the raw materials it lacks domestically can be secured elsewhere; a state often adopts a national policy calling for aggressive military action in case other measures fail in securing adequate resources. It is poverty in raw materials which usually makes for international conflicts, sometimes gradually involving most countries of the world.

The endeavor of a state to become self-sufficient is a natural outgrowth of the fear that results from numerous disquieting world conditions. A country which attempts to practice such a policy in respect to its total economic needs however, can never find a prominent place among world powers because no single nation, not even the United States or the Soviet Union has a complete array of vital resources. Self-containment on the part of any modern nation is impossible. The effectiveness of national power is largely determined by a state's capacity for industrialization which, in turn, is almost wholly dependent upon the availability of essential raw materials. The outcome of any international conflict depends mainly on whether one or the other of the warring countries can maintain an adequate supply of vital raw materials in case there is a severance of extraterritorial transportation and communication lines, thereby preventing the flow of outside materials. However, it should be remembered that not only must a state possess adequate resources but its people need to have the faculty of utilizing them to the best advantage.

The United States is perhaps the world's richest and most powerful nation. The development of its economy has been largely governed by a wealth of readily available raw materials and the ability of the American people to utilize them effectively. It is also considered to be one of the most self-sufficient countries and yet, in spite of a considerable array of domestic resources, approximately thirty per cent of the nation's basic raw material requirements, many of strategic importance, are secured from foreign areas. These sources of supply, especially those of extracontinental origin, present a serious weakness in American defenses because of the vulnerability of supply lines, particularly to sustained aircraft and submarine attack. The United States can not maintain itself in the face of

powerful aggression unless it possesses suitable and readily available domestic raw materials or has absolute control of foreign sources of supply which can be safely transported even in periods of international conflict. The success or failure of the nation to fully meet requirements for national security will depend chiefly upon its ability to secure and utilize adequate supplies of vital materials, regardless of world conditions.

Soil.—Soil is the basic land resource and should be regarded as the most valuable of all natural resources since it provides, in the form of vegetable and animal products, the subsistence of mankind. The abundance or scarcity of food production, a serious factor in security as well as the foremost requirement for national power, largely determines the economic, political, and cultural development of a people. Countless other basic necessities, including a broad variety of raw



FIG. 6. Broad areas of fertile, well-watered plains are an important asset in a country's bid for world power.

materials for industry, are produced from the soil. In many regions throughout the world, agriculture is the predominant occupation because suitable climatic and soil conditions are present for satisfactory plant growth. No state can adequately maintain a fairly dense population, on an agricultural base or otherwise, if it does not possess sufficient amounts of productive land and the means whereby the fertility of the land can at least be maintained (Fig. 6) unless the food deficiency is taken care of by imports.

The soil makes possible a great variety of valuable foodstuffs, such as beans, corn, fruits, potatoes, rice, sugar, wheat, cacao, coffee, tea, opium, spices, tobacco, and livestock products. From it comes directly or indirectly, the textile fibers with cotton, rayon, silk, wool, abaca, flax, henequen, jute, and sisal of greatest importance. The fats and oils are also products of the soil, the more necessary of which are butter, lard, and oleo fats, and castor bean, coconut, corn, cottonseed,

hempseed, linseed, olive, palm, peanut, poppyseed, rapeseed, sesame, soybean and tung oils. All of these products hold a significant position in the economy of any industrialized state, especially if that political entity seeks to become a world power.

Minerals.—The value of minerals in the production of energy and their use as raw minerals in industry cause serious clashes between nations; they are bound to be more frequent as exploration and development of deposits is extended. Next to agriculture, mineral resources are the most critical element in national sufficiency, regardless of whether a state is at peace or engaged in world conflict. Economic sufficiency in minerals is improbable for any state because their distribution is so uneven in variety as well as in quantity. Nations must depend on



FIG. 7. Fertile grasslands encourage settlement and tilled crops tend to replace the native vegetation.

international trade and exchange to meet their requirements. Minerals are exhaustable, and while reserves of some occur in adequate quantities, others may be expended during the present century unless they are used wisely and conservatively. Declining domestic reserves is a specter which no state wishes to face because of the realization that the outcome of international conflicts depends largely on the availability of raw materials or adequate substitutes.

The Industrial Revolution gave a great stimulus to mining and although the number of commercially important ores was small, manufacturing nations offered encouragement to mineral explorations. Among the many minerals now necessary for satisfactory economic development, bauxite, coal, iron, and petroleum hold first place in the economy of every industrialized state. Other minerals occupying commanding positions are as follows: antimony, asphalt, asbestos, chromium, cobalt, copper, diamonds, graphite, iodine, lead, manganese, magnesium, mercury, mica, molybdenum, nickel, nitrate, platinum, phosphate, potash, quartz, silver,

sulphur, tin, tungsten, uranium, vanadium, and zinc. Unless a state possesses adequate domestic supplies of these minerals or has complete control of foreign deposits readily accessible at all times, there is little possibility of that state ever becoming a world power.

NATIVE VEGETATION

The distribution of native vegetation corresponds closely to the arrangement of climatic types. Observation shows that forests grow most luxuriantly if rainfall is sufficient throughout the year, with dense stands of large trees in the areas of greatest effective precipitation. The forested areas give way to parklands and grasslands (Fig. 7) where certain conditions of drainage and soil, or external disturbances, prevent normal tree growth; also where, with decreasing annual precipitation, the seasonal distribution of rainfall becomes more marked. As

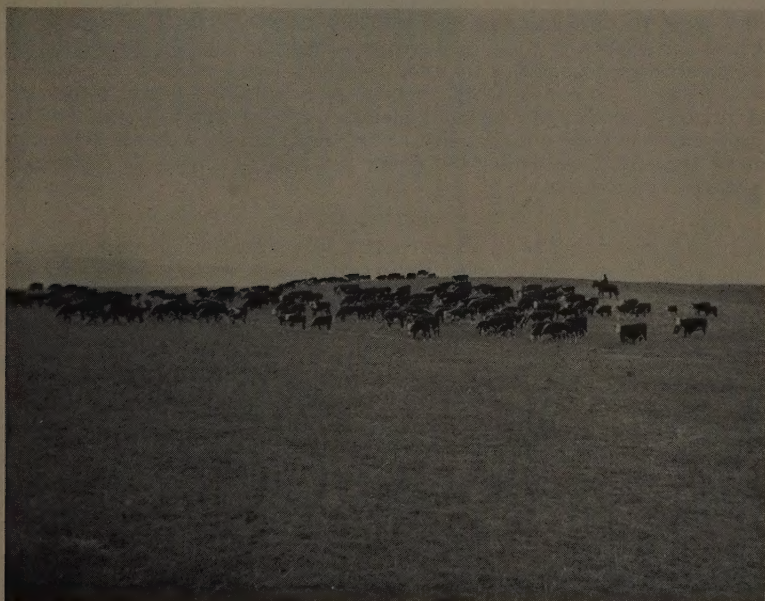


FIG. 8. Ranching is the dominant industry in semiarid regions possessing nutritious grasslands.

aridity increases the short grasses, desert shrubs, and numerous other drought-resistant plants displace the tall grasses and forests of the sub-humid regions.

Ready access to forests and forest products is of much importance, and states in possession of large stands of commercial timber are indeed fortunate because they can, if necessary, become independent of foreign sources. The forests of every continent, even Australia, are being drawn upon more and more for lumber, wood pulp, and tannin. Likewise the demands are heavy for camphor, cinchona bark, coconut husks, cork, kapok, oil-bearing nuts, and rubber. Then too, the requirements of modern technology appear to grow even greater as more and more timber is converted into clothing, plastics and numerous other products. The large powers own or control most of the world's forests, not only in the middle and high latitudes but in the tropical regions as well. These same states also possess or control the vast grasslands (the Pampas excepted) which, if carefully

managed, are a constant source of wealth in the form of animal products (Fig. 8). The world's pasture lands have outstanding value, especially where they form the major resource underlying the national economy of such countries as Argentina, Canada and Australia. A large part of the humid grasslands in the middle latitudes have been brought under cultivation and now produce a substantial part of the grain needed in areas so densely populated that domestic food supplies are grossly inadequate.

POPULATION

The physical factors already presented have in themselves no geopolitical importance unless mankind occupies the land. Population, provided it has suitable capabilities and vigor, is without question the most important of the prerequisites for national power. A state needs people, not only to settle upon the land, but to develop the available resources. In periods of international conflict a nation must provide adequate manpower on the home front as well as on the battlefield. However, it would be a serious mistake to consider population figures alone and disregard quality. In some instances large numbers of people may prove a liability, especially when a state lacks suitable mineral resources and broad tracts of fertile, well-watered plains. Another liability may be that of language differences since a diversity of languages tends to divide a population, thereby considerably weakening the power potential of a nation. Switzerland is the outstanding exception.

CONCLUSION

The conditions which bring about conflict between states are numerous as well as exceedingly varied, and in most instances the contributing factors are closely mingled together. International problems tend to become world-wide in scope. Since both defense and offense are based largely upon human and natural resources in addition to technological advancement and industrial strength, the people of the United States must go forward with intense, harmonized endeavors so as to make the country powerful and self-reliant. In view of the fact that no state can maintain its economic and industrial life if denied free access to the world's widely scattered stores of raw materials, it is imperative that the American people adopt a strong position of preparedness as long as the possibility of international conflict remains. A nation caught unprepared can no longer hope to secure adequate time to mobilize and prepare its defenses.

Because the heavy demands of international conflict tend to weaken a state through rapid depletion of a wide variety of highly valuable raw materials, the United States needs to (1) possess a carefully prepared inventory of its total available resources in order to know, insofar as possible, the reliance the nation must place on extracontinental sources; (2) determine areas from which the country can draw vital materials, especially those localities accessible even in time of war; and (3) thoroughly investigate the possibilities of synthetic products so as to be in a position to replace if necessary the raw materials now secured from foreign countries. Also a rigid set of conservation policies should be established in order to prevent the present serious drain on natural resources.

The American people have a destiny but they must make manifest the pattern to be followed and demonstrate their moral greatness and political ability for world leadership. Economic, political, and cultural ties with all parts of the earth must be recognized and their importance fully acknowledged. Each citizen of the United States has a personal stake in the fortunes of mankind—every action or policy of his Government will continue to greatly influence the order and magnitude of world events. This nation, like any other, cannot escape the physical or moral effects of either peace or war, and therefore the big task ahead is to control these effects to the best advantage, a task which can not be accomplished without adequate foresight and military power.